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MANUAL

OF

MATERIA MEDICA, &c.

E. I. H 1831

A

MANUAL

OF

MATERIA MEDICA

AND

PHARMACY,

COMPRISING A CONCISE DESCRIPTION

OF THE

ARTICLES USED IN MEDICINE;

WITH

OBSERVATIONS ON THE PROPER MODE OF COMBINING AND ADMINISTERING THEM:

ALSO THE

FORMULÆ FOR THE OFFICINAL PREPARATIONS OF THE LONDON, EDINBURGH, DUBLIN,
PARISIAN, AMERICAN, AND MOST OF THE CONTINENTAL PHARMACOPŒIÆ:

TOGETHER WITH

A TABLE OF THE PRINCIPAL MEDICINAL PLANTS.

FROM THE FRENCH OF

H. M. EDWARDS, M.D., AND P. VAVASSEUR, M.D.

CORRECTED AND ADAPTED TO BRITISH PRACTICE,

BY JOHN DAVIES, M.R.C.S.,

SURGEON OF THE HERTS MILITIA, LATE EDITOR OF THE LONDON MEDICAL
AND SURGICAL JOURNAL, ETC.

LONDON:
WHITTAKER, TREACHER, AND CO.

1831.

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C. SMITH, PRINTER, WYCH STREET, STRAND.

BIBLIOTHECA BODLEIANA

TO

SIR ASTLEY PASTON COOPER, BART.,

Sergeant-Surgeon to the King, etc., etc., etc.

WHOSE TALENT, EXTENSIVE SCIENTIFIC ACQUIREMENT,

AND ACUTENESS OF OBSERVATION,

HAVE CONTRIBUTED SO MATERIALLY TO THE ADVANCEMENT OF

MEDICAL SCIENCE;

AND

WHOSE CAREER IN LIFE

HAS EVER BEEN DISTINGUISHED BY URBANITY OF MANNER,

BENEFICENCE, AND HUMANITY;

THEREBY RENDERING HIM AN EXAMPLE AND AN HONOUR TO THE

PROFESSION TO WHICH HE BELONGS;

THIS WORK IS INSCRIBED,

BY PERMISSION,

AS A MARK OF RESPECT AND ESTEEM,

By his most obedient,

And very humble Servant,

THE EDITOR.

PREFACE OF THE EDITOR.

The Editor submits an English Edition of Messrs. Edwards and Vavasseur's Manual to the opinion of his medical brethren in this country, with the hope that it may be found to facilitate the study of those branches of the healing art of which it treats. He has been induced to undertake the task of preparing the present Edition after giving a full consideration to the merits of the works on Materia Medica and Pharmacy, published in Britain.—Whether his labours are likely to lead to any benefit to the profession he leaves to his brethren and to time to determine.

The work is intended to assist more particularly two classes of individuals; namely, the student, and the *counter*-practitioner. With regard to the former, the Editor flatters himself that the conciseness and arrangement of this work, compared with others having similar objects, will tend materially to shorten his study. The manner of classifying remedies adopted by our authors presents, perhaps, fewer objections than any other.

There can be no doubt that a proper arrangement tends materially to assist the memory and to facilitate study, and the Editor conceives that the plan laid down here is that best calculated to answer the desired purpose, inasmuch as it groups together remedies belonging naturally to the same families, as well as those endued with similar physiological properties.

As a work of reference to the chemist and druggist, and to all those who are in the habit of attending to counter practice, the present will be found to afford greater assistance than perhaps any English work yet published.

The Editor has made numerous corrections in the present Edition, and he has also added some new matter to the work: upon the whole, he has done all in his power to render it acceptable to the members of the profession in this country, and more especially to the student preparing to undergo his examination at the Apothecaries' Hall.

Hertford, June, 1831.

PREFACE OF THE AUTHORS.

A DESIRE of being useful to students preparing for their examination in Materia Medica, and to young practitioners, has induced us to undertake the present work. Our object has been to present to them a concise view, but as complete as possible, of our present knowledge on this very interesting branch of the healing art, by bringing into a small compass all that is essential to be known on the subject. The favourable reception which the preceding edition has met with, notwithstanding its defects, has imposed upon us the necessity of exerting ourselves to render the present less imperfect. In this manner, without departing from the plan already adopted, we have entirely re-written this manual, to give it more uniformity, more connexion, and especially to render it more complete. We have supplied several omissions; we have also suppressed some articles relating to unimportant subjects; we have paid particular attention, in the description of medicinal substances, to present as clearly and as concisely as possible, the principal physical and chemical characters which distinguish them; and, finally, we have endeavoured to give an idea of their modus operandi on the economy in general, and their therapeutical employment, as exact as the present state of our knowledge would permit.

We have added, as in our former edition, to the description of the physical, chemical, and therapeutical properties of plants used in medicine, the indication of the principal botanical characters which serve to distinguish them. This is a point so essential in the history of a great number of remedies, that we are astonished that most writers on pharmacology have omitted it. The excellent work of M. A. Richard, entitled Medical Botany, has served us as a guide in this part of our work. What we have just noticed respecting the botanical character of plants is equally applicable to the officinal preparations; for, neither their exact composition nor even their name is indicated in most of the works on materia medica. A knowledge of these preparations seems to us a thing of primary importance; indeed, when we prescribe a compounded remedy, is it not indispensable to know precisely the active principles which it contains, and the proportions of these principles? Thus, in administering, for instance, the laudanum of *Sydenham*, or of *Rousseau*, is it not necessary to know that twenty drops of the former are equivalent to a grain of opium, whilst seven drops only of the latter contain the same quantity of this article? This very important study is too much neglected, and this neglect may be ascribed to disinclination to consult the different pharmacopœiæ, and to search for that knowledge which can only be found in voluminous works, or in the extracts that have been made from them. Then, by adding to the history of each remedy the indication of the principal officinal preparations in which it enters as an essential part, their composition, and the doses in which they may be administered, we believe we perform a very important task, and we doubt not that our work owes to this circumstance a part of the success which it has obtained. In the first edition we confined ourselves to mentioning the principal officinal preparations of the pharmacopœiæ of London, Edinburgh, Dublin, and Paris; in the present one we have added those of the pharmacopœiæ of Austria, Russia, Finland, Denmark, Prussia, Poland, Madrid, Holland, &c. Finally, in order to render the work more complete and useful, we have added to the history of each remedy a considerable number of magistral formulæ, so that the student may at once be acquainted with its simplest modes of administration, and those most generally employed. Most of these formulæ have been extracted from the formulary of Dr. Magendie, from those of the civil hospitals of Paris, from Dr. Ratier's, and from that of Guy's hospital.

In describing each medicinal substance we have noticed—

1st. The different names by which it is generally known, and especially the popular pharmaceutical and scientific appellations, whether botanical or chemical.

2d. Its origin.

3d. When it is a vegetable substance, the botanical characters of the plant which furnishes it is also given. As to the names of the families to which these plants belong, we have presented them at the end of this work, in a tabular form, in order to avoid tedious repetitions.

4th. Its physical properties, and by these, we understand its description in the state in which it is commonly found in commerce.

5th. Its chemical properties.

6th. The substances with which it must never be combined in a pharmaceutical preparation.

7th. Its preparation.

8th. Its mode of action on the economy and its therapeutical employment.

9th. The doses in which it is usually given. The different forms in which it may be employed, either internally or externally; the principal officinal preparations into which it enters as a component part, its composition and doses; and, finally, some magistral formulæ to serve as examples of the manner of prescribing it.

In the first chapter, under the head of general considerations, we have presented that which is most essential to be known respecting remedial agents in general; we have considered them in relation to their physical and chemical properties, their natural affinities, their mode of action on the animal economy, the different preparations to which the pharmaceutist subjects them, the various modes of administering them, and, finally, the rules to be followed in their administration and in the manner of mixing them.

In a compilation of this nature, the plan of which is concise, it is almost impossible to cite all the authors from which we have derived our information; however we shall here mention those works to which we are mostly indebted. They are—

Professor Alibert's *Elements of Therapeutics.*
Barbier's *Treatise on Materia Medica.*
Brugnatelli's *Materia Medica.*
Chapman's *Elements of Therapeutics.*
Chevalier and Idt's *Manuel des Pharmaciens.*
Chevallier, Richard and Guillemin's *Dictionary of Drugs.*
De Candolle's *Essay on the Medicinal Properties of Plants.*
Desbois de Rochefort's *Course of Materia Medica.*
Duncan's *Edinburgh Dispensatory.*
Geoffroy's *Tractatus de Materia Medica.*
Guersent's *Medical Dictionary.*
Guibourt's *Hist. des Drogues Simples.*
Hanin's *Lectures on Materia Medica.*
Orfila's *Elements of Medical Chemistry*, and *Lectures on Legal Medicine and Toxicology.*
Paris' *Pharmacologia.*
Patissier's *Manual of Mineral Waters.*
Richard's *Medical Botany.*
Schwilgue's *Materia Medica.*
Swediaur's *Pharmacologia and Pharmacopœia.*
Thénard's *Treat. on Chemistry.*
Todd Thomson's *London Dispensatory.*
Virey's *Natural History of Medicaments.*
Whitelaw Ainslie's *Materia Medica*, &c. &c. &c.

N.B. In the body of this work we have printed in italics the pharmaceutical and scientific latin names of medicinal substances, and those of the officinal and magistral pharmaceutical preparations.

LIST

OF THE

SIGNS AND ABBREVIATIONS

EMPLOYED IN THE COURSE OF THIS WORK.

℔. Pound.
℥. Ounce.
ʒ. Drachm.
℈. Scruple.
Gr. Grain.
C. *Congium*, Gallon.
O. *Octans*, Pint.
f.℥. Fluid ounce.
f.ʒ. Fluid drachm.
♏. Minim.
Gut. *Gutta*, Drop.
Cochl. *Cochleare*, Spoonful.
Cochl. maj. *Cochleare majus*, Table-spoon.
Cochl. min. *Cochleare minus*, Tea-spoon.
Manip. *Manipulus*, Handful.
j. i. One.
ss. Half.
āā. or ana. Of each.
q. s. *Quantum sufficit*, As much as necessary.
p. e. Equal parts.
P. U. Parts used in practice.
B. C. Botanical characters.
P. P. Physical properties.
C. P. Chemical properties.
Incomp. Subst. Incompatible substances.
Prep. Mode of Preparation.
Th. E. Therapeutical employments.
D. & M. of Adm. Dose and mode of administration.
L. London Dispensatory.
E. Edinburgh Dispensatory.
D. Dublin Dispensatory.
U. S. Pharmacopœia of the United States.
P. Codex Parisiensis.
A. Austrian Pharmacopœia.
R. Russian Pharmacopœia.
F. Pharmacopœia of Finland.
Den. Pharmacopœia of Denmark.
Pr. Prussian Pharmacopœia.
Pol. Pharmacopœia of Poland.
B. Batavian Pharmacopœia.
M. Pharmacopœia of Madrid.
New York H. Pharmacopœia of the New York Hospitals.
Guy's H. Pharmacopœia of Guy's Hospital.
Paris H. Formulary of the Hospitals of Paris.
F. M. Formulaire magistral du Dr. Magendie.
Comp. *Compositus*, Compound.
Ext. *Extractum*, Extract.
Pulv. *Pulvis pulverisatus*, Powder, pulverized.
Boil. Boiling.
Infus. Infusion.
Decoct. Decoction.
Carb. Carbonate.
Sulph. Sulphate.
Nitr. Nitrate.
Mur. Muriate.
Acet. Acetate.
Intern. Internally.
Extern. Externally.
Lin. Linnæus.
Lam. Lamarck.
De Cand. De Candolle.
Rich. Richard.
Willd. Willdenow.
Walt. Walter.
Mich. Michaux.
Humb. Humboldt.
Salisb. Salisbury.
Muhl. Muhlenberg.
Marsh. Marshall.
Rumph. Rumphius.
L'Herit. L'Heritier.
Morris. Morrison.

MANUAL
OF
MATERIA MEDICA.

CHAPTER I.

GENERAL REMARKS.

§ 1. MATERIA MEDICA, or PHARMACOLOGIA, (φαρμακον, remedy, and λογος, treatise or discourse,) has for its object the knowledge of *remedies* or substances employed in the treatment of diseases, and which possess the property of modifying the actual state of one or more of our organs. It comprehends the study of the physical and chemical properties of these substances; of their intimate nature; of their action on the animal economy; of the cases in which they may be advantageously used; and, finally, of the mode in which they are to be prepared and administered.

§ 2. It is difficult to establish a strict distinction between remedies and aliments. In fact, they have both a common origin; their action on the economy produces changes in its actual state, and their employment may be useful in restoring health. M. Barbier establishes, as a distinctive character of remedies, the property of not being decomposible, nor of being easily transformed into chyle by the action of the stomach, but of being capable of modifying the state of this organ; whilst, on the contrary, alimentary substances are digested and transformed into chyle. In most cases this distinction is correct; thus, camphor, introduced into the gastric cavity, soon passes into the circulation, and is found afterwards in the blood and urine in the same state as it was administered; but there are, nevertheless, several remedies which undergo remarkable changes; for instance, most of the alkaline vegetable salts are transformed into carbonates; and several vegetable substances, evidently absorbed, are not, however, to be found in the blood. On the other hand, we do not believe that, in the present state of our physiological knowledge, we can positively affirm that certain proximate principles, which justly deserve the name of aliments, such as fibrin and albumen, do not pass into the blood without previously undergoing changes in their intimate nature. We do not consider, consequently, this distinction between remedial and alimentary substances as sufficiently accurate. In order to avoid these inconveniences, it would probably be sufficient to investigate whether these different substances, immediately after being absorbed, have, or have not experienced any alterations in their nature before passing into the circulation: some being assimilated to our organs, and becoming an integrant part of our body, whilst others do not contribute, in a direct manner, to nutrition. The former are the aliments, the latter the remedies. There are, however, a certain number of nutritive substances which are ranked amongst remedies; but these are such as are not commonly used as aliments, or they are such as are endowed at the same time with other virtues, by which some advantage may be derived in the treatment of diseases. Acid fruits, farinaceous seeds, albumen, gelatine, &c. are of this description.

§ 3. The line of demarcation, which distinguishes remedies from poisons, is not better defined; for the differences between them often consist simply in the greater or smaller degree of intensity of their action upon the economy. Both modify the actual state of our organs; but to those which are useful in the treatment of diseases we give the name of remedies, whilst we call poisons "every substance which, when taken internally, or applied in whatever manner on a living body, and in a very small dose, impairs health, or annihilates life entirely." (Orfila's Lect. upon Leg. Med. Vol. II. p. 3.) And, indeed, we often find the same substance act as a remedy, or as a poison, according as it may be employed in a smaller or larger quantity; and the most violent poisons become, in the hands of a skilful practitioner, the means of effecting the most astonishing cures; thus we may say with Pliny, *ubi virus, ibi virtus.*

Physical Properties of Remedies.

§ 4. The three kingdoms of nature furnish us with remedial substances. Their physical properties will not always inform us of their mode of action on the animal economy; but, in a great number of cases, the investigation of their colour, odour, and taste, will furnish us with an approximate idea of their virtues. We shall therefore investigate their different properties.

§ 5. The colour of mineral substances affords no indication of the mode or intensity of the action which these substances are likely to produce on the animal economy; thus, corrosive sublimate (one of the most violent poisons,) is white, like the sulphate of magnesia (a very mild purgative), as well as the hydro-chlorate of soda or common salt (an excitant daily used as a condiment). The same is the case with remedies derived from the animal kingdom; but vegetables present in this respect some very remarkable differences. The *white* colour seldom belongs to plants endowed with very active properties; on the contrary, it exists almost always in mucilaginous, insipid, and emollient vegetables. In general, we may even assert, that among the plants which constitute varieties of the same genus, those, the colour of which is paler, are also less active. There are, however, exceptions to this rule; thus, the cruciferæ, whose flowers are white, are endowed with medicinal properties more energetic than the species of the same family which bear yellow flowers.

The *yellow* colour is met with in a vast number of plants; but, although it exists in several insipid, sweet, and acrid vegetable substances, it belongs more especially to those which contain a bitter principle, and this colour very seldom co-exists with free acids. The greater number of vegetables possessing the most intense bitterness are of this colour; as colocynth, gentian, gamboge, columbo, rhubarb, &c. However, the proximate principles to which these substances are indebted for their bitterness are, most frequently, white; and, on the other hand, the liquorice root is yellow, although its taste, far from being bitter or acrid, is sweet and saccharine.

The *red* colour in vegetables most frequently indicates, an acid or astringent property. All red fruits contain a more or less considerable quantity of acid; the same is the case with many flowers; thus, the petals of red roses have a very decided astringent taste, and contain an acid, whilst the petals of white roses are, on the contrary, tasteless and mucilaginous. Finally, in the stem and roots this colour is still united in a great number of cases, with a styptic taste, owing to gallic acid and tannin. The rathania and strawberry roots are an instance of it; but even here we must not generalize too much; for we meet with numerous exceptions, amongst which we will only mention the nutgall.

The *brown* colour has a great analogy to the preceding, inasmuch as it very seldom belongs to substances which do not possess more or less astringent or tonic properties, proceeding from the presence of tannin, or its proximate bitter principle. The cinchona, the oak bark, kino, &c., are instances of it. Sometimes these principles exist simultaneously with a volatile oil, which by its hot and pungent taste and its stimulating action disguises more or less completely their properties; this we find to be the case with cinnamon, cloves, &c.

The *green* colour, which is the most generally diffused in the vegetable kingdom, is commonly an indication of a sharp taste, more or less astringent; this indication will be found sufficiently correct in fruits, but less so with respect to the leaves.

The *blue* colour indicates generally, the presence of a free alkali. Some plants, the flowers of which are of a lively blue, such as borage, have no venomous action; but most commonly, those with dark blue flowers, and with leaves which participate of this colour and are of a glaucous green, have a very powerful action on the economy, and may become valuable remedies or energetic poisons; such are hellebore, the papaveraceæ, &c. It has been remarked likewise that the fungi, the juice of which is of a bluish colour, are acrid and venomous. Nevertheless the epidermis of some fruits, the plum and black grape, for instance, is of this colour, although it is no indication of any noxious property.

Finally, the *black* colour belongs more especially to venomous plants; those, the stems and leaves of which are spotted with black dots contain, in general, some venomous principles, which are found but in small quantity, or even not found at all in the species closely allied to them. The black colour of the fruit, the blackish-brown tint of the flowers, the gloomy and dull appearance of the whole plant, are so many indications of its acrid and narcotic properties. The belladonna, solanum nigrum, hyoscyamus, &c. are instances of it.

Thus we see by the above remarks that the *colour* of plants may furnish us with indications of their other properties; but as we meet at every step with numerous exceptions, these considerations can never be of great value.

As to the proximate principles of vegetables which are employed in the practice of medicine, their colour, generally *whitish*, cannot in any way lead us to pronounce beforehand on their nature of mode of action.

§ 6. We are no better enlightened by the *taste* of remedies as to their therapeutic action, than we are by the characters drawn from their colour. Nevertheless, substances which do not affect the organ of taste, are commonly devoid of any very appreciable action on the economy, unless, however, they should be very minutely divided. As the taste of substances varies almost ad infinitum, it is often very difficult, if not impossible, to define it. There is, however, a number of them which are so very distinct in taste, and so generally known, as to enable us to mention them here.

The *salt* taste is peculiar to some mineral substances, and to vegetables which contain a large proportion of saline principles, such as *salsosa soda* and other plants growing on the sea shore.

Generally the substances endowed with this savour irritate the parts with which they come in contact.

The *acid* taste is still more characteristic; it is always owing to the presence of an acid, that is, of a *compound* endowed with the property of reddening litmus, and of forming with salifiable bases, new compounds, called salts. Acids are furnished by the three kingdoms of nature; those derived from the mineral kingdom are the most energetic; when the acids are concentrated, their taste is not only acid, but it becomes even caustic. Acids, when weak or diluted, act upon the economy as refrigerant and temperating medicines.

The *caustic* taste, proceeds from the corrosive action which some substances exercise on the organ of taste. This property is peculiar to concentrated acids, alkalies, to some other mineral, and to a few vegetable and animal substances; such as cantharides, mezereum, &c. The *acrid* taste differs but little from the preceding except by its degree of intensity; it is peculiar to a great number of articles obtained alike from the mineral and vegetable kingdoms. Such of the latter as possess this acrid quality only in a small degree, are irritants, and may act as general excitants, purgatives or emetics. Those, on the contrary, in which this savour is highly developed, act, generally, as substances of a caustic nature, by disorganizing the tissues, or by producing on them any inflammation more or less lively, According to the degree of intensity of this action they are called *caustic vesicating*, or *rubefacient* substances.

The *astringent* or *styptic* taste is one of the most distinct and best characterized, and is found in a great number of vegetables. As we have mentioned above, it commonly co-exists with the red and brown-red colour, and it indicates generally the presence of gallic acid and of tanning substances. It is met with likewise, but somewhat modified, in some mineral substances, such as alum, the salts of iron, &c. Most of the remedies endowed with this taste act, generally, in a similar manner on the living tissues, as will be seen in the sequel.

The *bitter* taste is one of the most common in nature, and belongs principally to vegetable and animal substances.—It forms the general character of tonic remedies, but it is also found in several substances, the actions of which are very different, such as colocynth, aloes, nux vomica, &c.

The *hot* taste also appertains almost exclusively to vegetable and animal substances, and especially to the vegetables called aromatics and spices. It is in many instances combined with the bitter savour, and indicates frequently the presence of an essential oil, the action of which stimulates powerfully.

The *nauseous* taste is closely connected with the impression produced, on the olfactory organs, by the substances possessing this quality. It is only to be found in a small number of substances and, besides, it cannot give us any indication of their modus operandi; however, we may with propriety say that it appertains more especially to narcotic vegetables, although it exists also in several exciting, purgative and emetic remedies.

The *mucilaginous* taste indicates generally the presence of gum, fecula, albumen, or other proximate principles possessing nutritive properties, but very slight remedial action. Most of the substances endowed with this savour are used as emollients. The same is the case with the *saccharine* taste; which is met with, however, in several gentle purgatives, and in some metallic preparations.

§ 7. The *odour* of remedial substances may, sometimes, be the means of enabling us to ascertain the mode of action they are liable to induce on the animal economy, principally when they belong to the vegetable kingdom, since most of the mineral substances are inodorous. It is, perhaps, still more difficult to define and classify the odours than the different tastes of substances, we shall therefore confine ourselves, as we have done hitherto, to those only which are the most generally known and at the same time the most strongly characterized.

The *aromatic* odour is connected generally with the hot and pungent taste, and in many cases it proceeds from a volatile oil, to the presence of which most aromatic vegetables owe their stimulating property. *Musk, balsamic* and *resinous* odours, and some others, have a great analogy to the one just mentioned, and thus belong more particularly to the class of excitants. There are, however, some of these substances which have scarcely any odour, such as capsicum, &c.

The *fetid* odour is found in several vegetables which act in a specific manner upon the nervous system and which are denominated anti-spasmodic. The odour of camphor produces the same effect. The *virose* odour almost exclusively characterizes or belongs to narcotic plants; however, it closely resembles the *nauseous* odour of most vegetables which act as purgatives or emetics. There are substances which, as ether and hydro-cyanic acid, possess an odour peculiar to themselves, rendering them easy to be recognized. Finally, the consideration of this property is often indispensable to enable us to judge of the quality of remedies: in fact a great number of them owe their activity to a volatile principle, which at the same time, renders them very odorous. Thus when they have lost their odour, we may be assured they have lost also their medicinal properties.

§ 8. Remedies may be administered in a solid, liquid, or gaseous state. These conditions influence their mode of action.

The same may be said as to their degree of division, when they are exhibited in a solid state. Thus, the *Asarum Europæum*, finely pulverized, acts as an emetic, whilst, when it is merely in coarse powder, is a purgative.

§ 9. The analogy existing between plants, as relating to their exterior forms, may often lead us to the knowledge of their therapeutic action. The plants, the botanical characters of which are the nearest connected, contain generally the same proximate principles, and, as it is upon their chemical composition their medicinal virtues depend, the existence of analogous principles necessarily implies a similitude of action. Now, since these divers proximate principles are the consequence of the nutrition of plants, and since this function is intimately connected with the structure of their organs, there must exist, generally speaking, determinate relations betwixt their structure and their therapeutic properties; and, indeed, experience in this case confirms what theory would induce us to suppose. It is now positively ascertained that, in most cases, all the plants which have with each other a sufficient analogy to be considered as varieties of the same genus, possess the same properties. We may even go farther, and say that, commonly, all the plants of the same family act, upon the living economy, in an analogous manner, and that it is probable that the anomalies which, in the present state of our knowledge, are exceptions to this general rule, will disappear when the structure of these plants shall have been more attentively investigated, and when their proper place shall be assigned to them in the natural order of plants. However, we have already been able to ascertain that the greater number of those families which may be considered the most natural, are composed of plants endowed with almost similar properties. Thus, the family *cruciferæ* contains an acrid volatile oil to which it owes its stimulating properties, and which is exhibited with success in the treatment of scorbutic affections and in atonic diseases generally. The family *labiatæ* contains, besides an aromatic essential oil, an extractive bitter principle; and therefore these plants are at the same time tonic and stimulating; but one of these properties predominates, according as the one or the other of these principles happens to be in a greater proportion. The same analogy exists between the plants of the family *umbellatæ*. The roots of all the *violaceæ* have more or less an emetic property; the *solanaceæ* are narcotic; the *euphorbiaceæ*, acrid and purgative; all the *coniferæ* contain a resinous juice which gives them peculiar properties. However, amongst the *rubiaceæ*, most of which are eminently tonic, we find the ipecacuanha which is essentially an emetic. In order to impart to these remarks a greater degree of evidence, we shall give at the end of this work a table of the vegetable remedial substances, arranged according to the order of their natural families.

Of the Intimate Nature and Chemical Properties of Remedies.

§ 10. All substances in nature are either simple or compound. The former, which are as yet known by the appellation of elementary bodies, are those which, until now, have never been resolved but into homogeneous particles. The latter, on the contrary, are composed of several elements, and, consequently, contain heterogeneous particles.

In the present state of chemistry, we are acquainted with fifty simple substances, viz. oxygen, hydrogen, boron, carbon, phosphorus, sulphur, selenium, iodine, chlorine, nitrogen, and forty metals, which are arranged under six heads, called classes, according to their degree of affinity for oxygen. But few only of these substances are employed in medicine, such as sulphur, iodine, iron, mercury, &c.; and even with respect to these, it often happens that they are combined with other elements through the instrumentality of our organs, and can only act on the economy in that state of combination. Besides, the action of each is different, and we cannot, therefore, say *much* respecting these substances.

The compound substances are divided into two large classes, according as they belong to the organic or inorganic bodies. The former constitutes the vegetable and animal, and the latter the mineral kingdoms.

All simple substances may, by their combinations, give rise to inorganic compounds; on the contrary, organic substances contain but a few of the elementary bodies. Thus, nearly all vegetable substances are exclusively composed of oxygen, hydrogen, and carbon, and most of the animal substances are also formed of these three elements, with the addition of nitrogen: sulphur, phosphorus, iron, &c. are likewise found in some organic substances, but in very small quantity. Thus the bodies resulting, in a direct manner, from the combination of these elements, and which, in their turn, aid in the composition or formation of the different parts of plants and animals, receive the name of *proximate principles.*

Among the compound substances furnished by the mineral kingdom, those which are the most generally used in medicine are the acids, the metallic oxides, some of the metallic sulphurets and chlorides, and salts.

Among the proximate principles of vegetable and animal substances, which are employed as therapeutical agents, some possess an acid, or an alkaline property, whilst others, on the contrary, do not possess either, and are, as it were, neutral.

§ 11. The term acid belongs to all the bodies endowed with the following properties:—1st, of producing on the organ of taste a sour or caustic sensation; 2d, of reddening the tincture of litmus; and 3d, of combining with the salifiable bases, more especially with alkalies, to form neutral salts. The mineral acids are either solid or gaseous, and most of them are soluble in water. Their composition varies; for sometimes they are formed of oxygen and another simple body; at others of hydrogen and of another elementary body, oxygen excepted. Vegetable acids are composed of carbon, and of oxygen and hydrogen in suitable proportions to produce water, with, moreover, an excess of oxygen. They are colourless; most of them are solid, inodorous, heavier than water, and soluble in this liquid as well as in alcohol. The acids which are found entirely formed in animals, or which may be obtained from animal substances through the instrumentality of different agents, are sometimes composed of nitrogen, carbon, oxygen, and hydrogen; at others, of hydrogen, carbon and nitrogen, or of these two latter elements united with chlorine.

Concentrated acids are never administered internally; they are sometimes applied to the skin as escharotics or as irritants. Several of them, when diluted with water, are rendered fit for therapeutic employment, and may be administered internally. Then they generally act as cooling, and, occasionally, as astringent remedies. Some of them, however, produce peculiar effects, as we shall mention hereafter.

§ 12. The salifiable bases are of three kinds: 1st, the metallic oxides; 2d, ammonia; 3d, the alkalies. The metallic oxides are compounds resulting from the union of oxygen with a metal, and almost all of them may, at a certain degree of oxidation, combine with acids and form salts. They are solid, heavier than water, brittle, and of a dull appearance when pulverized. With the exception of a single one, they are inodorous, and a few only are sapid and soluble in water. The oxides of the first section, that is, those which we have not yet been able to reduce, were formerly called *earths*. Those of the second section belong to metals which decompose water at the ordinary temperature, and absorb oxygen at all temperatures. The protoxides of calcium, strontium, barium, sodium, and potassium, which belong to this class, are more especially called *alkalies*. They are white, sapid, soluble in water; they turn the syrup of violets green, and bring back to its former blue colour litmus reddened by acids. The oxides of the other four classes are mostly of various colours, insipid, insoluble in water, and without action on the re-agents we have just mentioned. In the practice of medicine, we exhibit only some of the alkalies, the oxides of iron, mercury, zinc, &c.; but each of these substances acts upon the economy in a different and peculiar manner.

As to ammonia, we shall only say at present, that it is a compound of hydrogen and nitrogen, and has all the properties of the alkalies.

The *organic salifiable bases* are proximate vegetable products, having the property of uniting with acids, of saturating them more or less completely, and consequently forming salts. These bases are all solid, white, of a savour more or less bitter or acrid. Most of them are inodorous and capable of crystallizing. They are little or not at all soluble in cold water; but, on the contrary, soluble in alcohol. The quantity of acid they saturate is very small; they are all composed of carbon, nitrogen, hydrogen, and oxygen; they are decomposed by the action of caloric, and are thus converted into water, carbonic acid, ammonia, an empyreumatic oil, &c. They are very slightly soluble, and on this account are seldom used in medicine, except in the state of salts. Their action varies according to the nature of the plants from which they are extracted.

§ 13. Salts are substances composed of an acid and a base, in which the respective properties of these two elements are more or less completely neutralized. All salts are solid (the superfluate of silica, and sub-fluo-borate of ammonia excepted), and are more or less capable of crystallizing when they pass from the liquid or gaseous to the solid state. The form of their crystals varies; they contain generally more or less water, incorporated as it were with their particles, which is called *water of crystallization*. The salts formed by an acid and a colourless base, are also colourless; but in other cases, they are almost always coloured. The greater number of salts are inodorous; those which are insoluble in water are insipid; such, on the contrary, as are soluble in it, are more or less sapid.

Salts may be neutral, although they contain a small excess either of acid or of base. Salts of every description contain a determinate quantity of acid, and this quantity is such, that the proportion of oxygen which it contains, is in a constant relation with that of the oxygen contained in the base. Thus, in all the neutral sulphates the acid contains three times as much oxygen as the base; in the neutral carbonates the acid contains four times as much oxygen as the base; in the subcarbonates this proportion is as 2 to 1. The following examples will best explain this remarkable law:—

In the sub-carbonates we find—

100 parts of carbonic acid to contain	oxygen, 72.32	Soda	141.38	to contain oxygen, 36.15.
		Potassa	218.37	
		Baryta	343.83	
		Protoxide of lead,	506.06	

In the neutral carbonates we find—

100 parts of carbonic acid to contain	oxygen, 72.32	Soda	70	to contain oxygen, 18.07.
		Potassa	109	

In the neutral sulphates we find—

100 parts of sulphuric acid to contain	oxygen, 60.87	Soda	78.46	to contain oxygen, 20.07.
		Potassa	120.27	
		Lime	70.92	
		Magnesia	51.94	
		Zinc	101.96	

The solubility of salts in water depends not only on their affinity for this liquid, but also on the degree of cohesion of their particles. They generally require less warm than cold water for their solution. The salts with excess of base are insoluble when their base is itself insoluble; the salts with excess of acid are, on the contrary, more or less soluble.

By the action of caloric, crystallized salts, containing a great deal of water of crystallization, melt at first in this water, but afterwards dry up. Those containing but a small quantity of it decrepitate, that is, they are broken up into small fragments by the elastic power of the aqueous vapour, which is generated internally. Heated to a higher degree, salts melt, volatilize, and are decomposed. Finally, when they are moistened, they may all be decomposed by an electric current. Exposed to the action of atmospheric air, some of them absorb oxygen, and others are decomposed and volatilized; there are, however, few instances of this kind. Salts endowed with the greatest affinity for water, attract the moisture of the air, and are said to be *deliquescent*. Crystallized salts which have not a great affinity for water, and which contain a large proportion of it in the state of water of crystallization, yield it to the atmosphere by evaporation, lose their transparency, and crumble into powder; we then say that they are *efflorescent*.

The action which salts have on the economy is very different according to their nature; but, generally, it depends more upon the base than upon the acid.

§ 14. The analogy existing between the apparent properties of substances differing in their nature can seldom be a means of proving *à priori*, the influence they may have on the economy. In fact, we see that remedies which have the least resemblance to each other, as to their chemical characters, produce analogous effects. Thus, manna and cream of tartar are both laxative, although there is no resemblance whatever between them. On the other hand, baryta and strontia are both metallic oxides, the chemical properties of which are so similar that, for a long time, they were mistaken for each other; nevertheless, the former is a violent poison, whilst the latter has but a very weak action upon the economy, as Gmelin's late experiments prove. However, it has been generally observed that when a substance possesses therapeutical virtues, or is strongly marked by poisonous properties, different from those depending upon its chemical action on the tissues, its action is neither changed nor destroyed by any combinations that it may form; provided, however, that the latter be not insoluble in water. Thus, mercury, in all its preparations, produces a similar effect, but the intensity varies according to the degree of solubility of the different preparations, &c.; when, on the contrary, the activity of the remedial substance depends upon its chemical action on the tissues with which it is in contact, this activity may be completely destroyed by the effect of chemical combination. Potassa and concentrated sulphuric acid, for instance are both, very energetic caustics; but combined together, and constituting sulphate of potassa, their contact with the tissues scarcely produces any irritation.

Of the Action of Remedies.

§ 15. The changes which remedies produce in the actual state of the tissues with which they come in contact, may depend upon either the chemical action of these substances, or upon the peculiar influence which they exercise upon the vital properties of the organs, and the nature of which is unknown. Concentrated mineral acids, for instance, decompose the living parts exposed to their action, and convert them into eschars, in the same manner as they would decompose these same tissues were they deprived of life. Opium, on the contrary, has hardly any chemical action on our organs, but it modifies their vital properties in a very remarkable manner. This physiological action produces, sometimes, some changes in the physical properties of the tissues; thus, certain remedies applied to the conjunctiva, create a slight inflammation, whilst, at other times, this action is only manifested by the modifications which it induces in the exercise of the functions of these same organs. When, for instance, urea is conveyed into the circulation, it exercises a very decided influence on the kidneys, only appreciable, however, by the increase of the urinary secretion produced by it.

§ 16. The action of remedies is either local or general. The local action is that which occurs directly in the tissues to which they are applied. The substances which are administered in small quantity, produce only this latter kind of alteration. The local effects differ not only in consequence of the nature of the remedy employed, but also according to the organ it is applied to; thus, we sometimes see the same substance produce different phenomena when applied on the conjunctiva, the tongue, the mucous intestinal membrane, &c. The action of remedies may, to a certain degree, be propagated by the continuous surface of the same organ or membrane; but, when it becomes general, and affects the whole economy, it is owing to the absorption of their particles, to the sympathies they awaken, or, finally, to the revulsions they produce.

§ 17. The recent experiments which have been made on absorption prove, that the tissues, during life, may be penetrated by liquids. It is then easy to conceive how some remedies are capable of extending their sphere of action to a certain distance around the point to which they have been applied; or, in other words, of propagating their influence by contiguity of organs, without producing the same effects on the whole economy. Thus, emollient fomentations and poultices applied to the abdomen, when one of the organs contained in this cavity is inflamed, at first induce a relaxation of the skin, and they afterwards gradually extend their action to the parts more deeply situated.

§ 18. The phenomena of imbibition, which we have just mentioned, constitute, as it were, the first degree of absorption. The particles of the liquids penetrate, in this manner, into the interior of the vessels; they then mix with the blood and circulate with it into every part of the animal economy. Many are the circumstances which influence the rapidity of absorption: they are, on the one hand, the state of the patient, the structure of the parts with which the remedies are brought in contact; and, on the other, the physical and chemical properties of these substances.

In relation to the physiological state of the patient, it is ascertained, every thing being equal, that absorption is the less active in proportion as the mass of blood actually in circulation is greater, and *vice versa*. Thus, such a substance as is absorbed but slowly, and consequently the effects of which are less sensible in an individual of a general plethoric habit, will be more rapidly absorbed, and will act with greater energy, if, by any means whatever, the mass of the humours in circulation is diminished. According to some experiments we have made on this subject, it would seem also that the rapidity of the circulation influences the celerity with which the effects produced by the absorption of a remedial substance are manifested.

The degree of permeability of the tissues, and their state of vascularity must likewise contribute to accelerate or retard the absorption occurring in them. It is now ascertained that absorption is most rapid in the aerial cells of the lungs, and that the surface of the serous membranes possesses also a very active absorbing power; but it is less so in mucous membranes, and especially in that of the bladder; finally, the skin presents a still greater obstacle to the passage of these substances into the vascular system.

As to the influence which the nature of remedies has over their absorption, we may state as a general proposition that the more readily these remedies are soluble in water, the more easily will they penetrate into the circulation. Dr. Segalas has demonstrated that liquids are equally absorbed whatever may be their nature, provided they are miscible with the blood and exerts no corrosive action on our organs. Thus, *cæteris paribus*, water, diluted alcohol, a watery solution of narcotic poisons, are all absorbed with the same rapidity; whilst substances which are not miscible with the blood are absorbed with the greatest difficulty, even when they are in a liquid state; in fact, oil, injected into the peritoneal cavity of a dog, was there found after a lapse of several days, without having undergone any sensible diminution in quantity, whilst water disappeared from it in a few minutes. This phenomenon seems to depend upon a mechanical cause and may be owing to the physical properties of these substances; for Dr. Magendie has proved that when oil is injected into the veins, it stops in the capillary vessels, causes obstruction, and prevents the circulation from going on. It is not therefore astonishing that oil should penetrate through the tissues with the greatest difficulty. Substances, which, by their chemical action, produce a disorganization of the parts with which they are in contact, are not absorbed, which must be ascribed to the obstacles this phenomenon itself opposes to the action of imbibition.

§ 19. The particles of the remedial substances, thus conveyed into the current of circulation, penetrate with the blood into every part of the economy, and act directly upon the different organs. We shall hereafter investigate the phenomena they then produce, but we shall for the present confine ourselves to simply stating that, by physiological experiments, we have been able to demonstrate their presence in the cellular tissue and in the parenchyma of every organ in the body, and that they are excreted either by the pulmonary or cutaneous transpiration, or, which is most generally the case, by the urinary secretion.

§ 20. The action which remedies exercise on our organs sometimes extends to the whole economy, without their particles being absorbed by the simple intervention of the nervous system. They are then said to act by *sympathy*. By interrupting the nervous communication between the cerebro-spinal system and the parts to which the remedy is applied, we prevent the phenomena just mentioned from taking place.

A considerable number of substances act at first by sympathy, and afterwards by absorption: for instance, as soon as alcoholic liquors enter the stomach, they transmit to the cerebrum an excitant impression, which, from this point, is propagated throughout the economy. But these liquids are soon after absorbed, and they then excite all the organs in a direct manner. It is especially between certain parts that these sympathetic influences are more evident, such as the stomach and the lungs, the stomach and the brain, &c., for the sympathies do not exist in the same degree between all the organs. The state of sensibility of the part with which the remedy is in contact, influences, likewise, in a remarkable manner, the sympathetic effects which it produces. To conclude, there is only a limited number of remedies which act in this way.

§ 21. As to the general action which remedies are capable of producing by revulsion, we shall speak of it when we treat of their secondary effects. (See § 24.)

§ 22. The influence of remedies may be felt in a nearly similar manner by all the organs. Thus the tonic action of cinchona is at once extended to the digestive organs, the lungs, the muscular system, &c. Although many substances modify the actual state of the whole economy, still their influence is more especially felt by one or more of our organs. For instance, a certain quantity of tartrate of antimony and potassa induces always the same effects on the stomach and abdominal muscles, in whatever manner it may be conveyed into the mass of the blood. Indeed, whether it be introduced into the stomach, or injected into any part of the cellular tissue, or, finally, directly into the veins, this salt always produces nausea and vomiting. This action is so peculiar that, even after the removal of the stomach of the animal submitted to the experiment, the nausea and contractions of the abdominal muscles which so powerfully contribute to the action of vomiting, still continue. Tartar emetic, therefore, has a *special action*.

The action of other substances is particularly spent on the nervous system, and sometimes even on a particular part of it only. Of this number is strychnia, which, by its introduction in any manner into the circulation, seems to concentrate its stimulant action on the spinal marrow. In fact, the ablation of the brain does not prevent it from producing general convulsions and tetanus, as happens when the spinal marrow is mechanically irritated. Opium, the action of which on the nervous system seems no less evident, appears, on the contrary, to exercise its influence more especially on the brain. The same is the case with hyoscyamus, belladonna, &c. Iodine, although acting as a general stimulant, produces, nevertheless, some special effects, which have no relation to its general influence. The movements it excites in the thyroid and mammary glands leave no doubt on this subject. We might mention many other instances, but we believe that those we have just produced are sufficient to prove the *speciality* of action of certain remedial substances.

§ 23. The effects of remedies may be primary or secondary. The former are the changes induced by the direct action of these bodies on our organs; the latter, the phenomena resulting from these same changes, which are, as it were, their consequences. The primary effect of caustics is the disorganization of the tissue upon which they are applied; the inflammation and suppuration, by means of which the eschar is detached, are their secondary effects.

The alterations which remedies produce in the actual state of the organs, induce always some corresponding modifications in the exercise of the functions which these parts are called on to perform. Thus, a remedy which, by the contact of its particles, excites the organ upon which it exercises its action, increases the sensibility and the secretions of such organ. It is, indeed, from these latter phenomena, that we can estimate the kind of medicinal virtues belonging to the different substances employed as remedies; and in order to be well acquainted with them, we must successively examine the influence they possess over the most important functions, such as the circulation, respiration, digestion, secretions, &c.

The effects produced by the remedial action are, as we have remarked, either primary or secondary; the former are absolute; the latter, on the contrary, are relative. Thus, an excitant substance, conveyed into the circulation, will always stimulate our organs; but it may also produce perspiration, or increase the urinary secretion, according as the individual is exposed to a warm or a cold temperature. Moreover, these secondary effects vary agreeably to the state of the individual; for instance, in a person who has an attack of intermittent fever, the exhibition of tonics may arrest the particular symptoms of this disease; in another, affected with a chronic catarrh of the bronchi, the administration of the same remedies may facilitate expectoration; whilst in a third, the skin of whom is covered with scorbutic spots, it may cause them to disappear. But in the tonic plan of treatment the effects are always secondary, and are only manifested under particular circumstances. Thus when we say that a substance possesses febrifuge, antiscorbutic, or antiscrofulous properties, we wish only to designate its secondary effects.

§ 24. Observation has taught us, that when an acute inflammation exists in any organ, to create a more lively irritation in another part of the economy, will diminish the intensity of the first affection, and may dissipate it completely. This is the effect we wish to produce when we administer remedies called *revulsives*, the primary action of which, at first simply local, may be afterwards followed by the secondary effects which we have just mentioned. Blisters applied to the skin, and which produce an inflammation more or less lively, act on this principle. And for this reason they are employed with advantage in the treatment of certain internal inflammations; in fact, they are capable of diminishing their intensity, and seem, as it were, to draw them to the external surface.

§ 25. It is in consequence of the modifications which remedies induce in the actual state of our organs, that their employment can be useful in the treatment of diseases. Indeed, the considerations drawn from the nature of these alterations, must generally be our guide in the therapeutical employment of remedies. There are a few substances, the efficacy of which, in certain diseases, cannot be called in question, although in the present state of our knowledge, we cannot perceive any relation of cause and effect between the medicinal action they induce, and the influence they produce on the symptoms which constitute those pathological states; these substances are called *specific remedies*. We have an instance of this in mercury; the success derived from its administration in cases of constitutional syphilis cannot be explained by any of the changes which happen after its immediate action on our organs. However, it is probable that it acts in this way, and that these anomalies will disappear when we shall be better acquainted with the syphilitic diathesis.

§ 26. The power of habit influences, generally, in a very decided manner, the effects of remedies. The organs seem to accustom themselves, by degrees, to the contact of their particles, and to become less and less sensible to their influence. Indeed, it is necessary, when we exhibit the same substance for a length of time, to increase gradually its dose, in order that the impression it causes on our organs may be followed by the same effects. It is particularly among the remedies which act more especially on the nervous system that this phenomenon is remarkable. We know, in fact, that in the last stage of cancerous affections, when we undertake to soothe, by means of opium, the dreadful pains experienced by the patient, it is necessary to increase the dose daily in order to obtain the desired effect. The influence of habit upon the action of alcoholic liquors is not less evident. A man habituated to their use, may take a considerable quantity without experiencing any symptoms of intoxication, whilst in another individual, who has not this habit, a very small quantity is sufficient to produce such symptoms.

There are, however, several substances, the action of which, being slow and gradual, requires a certain time before it manifests itself and which becomes sensible only when their administration has been continued for a long time. The effects they produce are less susceptible of being weakened by habit, than those of substances endowed with a more prompt action. However, after the lapse of a certain time, we may, without fear of producing any great accidents, administer doses, the employment of which, in the beginning of the treatment, would have been followed by most alarming symptoms.

Of the Administration of Remedies.

§ 27. We are now to investigate the administration of remedies, 1st, with respect to the parts of the body with which they come in contact; 2d, to the doses in which they are prescribed; 3d, to their union with other substances, or the art of compounding a formula; 4th, to their choice, and to the pharmaceutical preparations which we cause them to undergo; 5th, and finally, to the forms under which they are administered.

§ 28. When remedial substances exert a decided action merely on the organs with which they come in contact, it is to the parts affected they are to be applied, unless it is desired to obtain, from their local action, some general effects by *revulsion;* in this case, it is always on a healthy part, more or less remote from the diseased organ, that it is necessary to act. It is thus that in the treatment of certain internal inflammatory affections, caustics or blisters are applied to the skin as rèvulsive means.

When the influence of a remedy can propagate itself by continuity of organs, we cause it to act on the part nearest to the affected point, in order that its effects may be as decided as possible; for the influence of these substances is less powerful in the same degree as the parts to which they are applied are more distant from those, the actual state of which we wish to alter.

As to remedies which act by sympathy, they are generally introduced into the stomach, inasmuch as this viscus has the most intimate sympathetic connexions with all the other important organs. When remedial substances act in consequence of the absorption of their particles, they are commonly administered internally; but they may be made likewise to penetrate into the economy, by being put in contact with the skin, thereby taking advantage of the absorbent power of this membrane. The presence of the eperdermis is a powerful obstacle to the absorption of the remedial particles, and it would take place very slowly, nay would scarcely occur at all, if the operation were confined to their simple application to the part. In order to obviate this inconvenience, it is necessary to force them, as it were, through the pores of the epidermis by means of frictions, or else it is requisite to remove this membranous coat, in order to bring them into immediate contact with the surface of the dermis. The former of these methods, that of friction, has been known for a long time, and is called *iatraleptic*. Dr. Chrétien, of Montpellier, has highly recommended it, and has prescribed it with success in a great number of cases. The latter is called by Dr. Lambert the *endermic* method. This gentleman, together with Dr. Bally has made a number of experiments, both at the hospitals of *La Pitié* and *Cochin*, by applying on the raw surface, produced by a blister, divers remedial substances capable of acting by absorption. The results of these experiments, recorded in a memoir read before the Academy of Sciences, leave no doubt whatever of the efficacy of this mode of administering remedies; a method which the author considers very advantageous in all cases where their irritant action on the gastro-intestinal mucous membrane is to be apprehended, and when it is desirable to preserve them from the alterations induced on them by digestion. He advises, however, to exhibit only in this way, remedies capable of acting with efficacy in very small doses, such as morphia, strychnia, quinia, corrosive sublimate, &c.

§ 29. The doses in which remedies are administered, are different for every individual, according to their nature and degree of activity. We cannot, consequently, establish any fixed rule on this subject, and actual experience alone must guide us in this respect. We shall merely remark, that the dose of the same remedial substance is to be varied according to the effects which we intend to obtain, the age, sex, temperament of the patient, &c.

The effects of remedies often differ materially according to the doses in which they are administered. Thus, most of the astringent, tonic, and excitant substances have but a purely local action when given in small doses; whilst on the contrary, in larger doses, their influence is extended to the whole economy. Opium taken in small quantity, is a very energetic anodyne; in larger doses it becomes excitant, and when taken in too large a dose, it produces cerebral congestion. Digitalis, in large doses, acts directly on the intestinal canal, as is evinced by the vomiting and alvine evacuations which follow its administration; in small doses, on the contrary, these local effects are no longer observable, and then we remark certain general phenomena, such as less frequent and less violent contraction of the heart, and an increase of the secretions, especially that of urine. The same thing happens with respect to the antimonial preparations, which, according to the dose they are exhibited in, are by turns emetic, purgative, and diaphoretic.

The dose of remedies must always be regulated by the age, sex, and temperament of the patient. It is a general observation, that the weaker an invidual is, and the farther removed he is from the age of puberty, the more strongly characterized are the effects of a definite quantity of a remedy. It follows, consequently, that in order to obtain the same effect in an adult as in a child, it is necessary to administer very different doses. The following table, drawn up by Gaubius, may be used as a guide by young practitioners, for the administration of active substances in different periods of life; however, it must not be considered as an invariable rule from which they cannot depart.

For an adult, the whole dose taken as unity, one.

Under one year - -	one-fifteenth to one-twelfth.
—— two years - - - -	one-tenth.
—— three years - - - -	one-sixth.
—— four years - - - -	one-fourth.
—— seven years - - - -	one-third.
—— fourteen years - - -	one-half.
—— twenty years - - -	two-thirds.
From twenty to sixty - - -	one.

Above this age, an inverse graduation must be followed.

The temperament of females being generally weaker than that of men, it is evident, after what we have just said, that they require rather smaller doses; but it would be difficult to fix precisely in what proportion.

The doses of remedies ought also to be modified according to the temperament and the idiosyncrasy of the patient; for we perceive at once that a very irritable person, possessing what we generally call a nervous temperament, will not bear, without inconvenience, the full dose of certain remedies, for instance, of an excitant nature, which may, on the contrary, be administered with advantage to an individual of an indolent and lymphatic temperament. It is consequently very important to adapt proportionate doses to these different conditions. On the other hand, certain individual dispositions, unknown as to their nature, the whole of whose characteristics constitute the idiosyncrasy, are the causes that the same substances, administered in the same doses and under the same circumstances, do not always act in the same manner and with the same energy on all individuals. Thus it is, that very minute doses of opium produce on some persons all the symptoms of narcotism, whilst others are almost insensible to it. Half an ounce of any neutral salt is sufficient, in many cases, to produce an abundant evacuation, and even a super-purgation, whilst, in other cases, two ounces, and even more, seem to remain without any effect whatsoever.

Finally, we must take into consideration the effects originating from habit, and remember that the organs submitted for some time to the influence of a remedial substance, are very soon habituated to it, and even to such a degree as to become almost insensible to its action. This fact is proved, among other instances, by the enormous quantities of opium that some individuals are able to take, without experiencing any immediate accidents; many cases of this kind are to be found among the eastern nations. It is by increasing gradually the doses of the substance employed, that we easily succeed in counterbalancing these effects of habit.

In the sequel of this work, we shall always indicate the dose of every medicinal substance which is commonly administered to an adult. We believe that, from the preceding considerations, every one may easily be able to modify and graduate the dose to suit the case, and according to the experience and observation which he may have acquired in this respect.

§ 30. Remedies are either simple or compounded. We call those simple which may be administered in the same state as nature furnishes them, or are formed of a single substance, the intimate nature of which may, however, be more or less complex, as ethers, acetate of morphia, cyanuret of mercury, &c. The latter, on the contrary, are the result of a mixture of two or more simple remedies.

Remedies are mixed together in order to attain various ends: 1st. To increase the action of the principal substance we inintend to administer; 2d, to lessen the too irritating action of a remedy, and avoid certain effects which would prevent it from fulfilling the indications we have in view; 3d, to obtain, at the same time, the effects of two or more different remedies; 4th, to compound a new remedy, the effects of which cannot be produced by any of the substances employed separately; 5th, and lastly, to facilitate the administration of remedial substances. Let us now examine each of these cases in particular.

§ 31. *The action of a remedy may be increased, 1st, by mixing several preparations of the same substance.* When all the active principles of a remedy are not soluble in the same *entirely different, and which are intended to fulfil various indications at the same time.*

With this object in view, purgatives are frequently united to antispasmodics, narcotics, tonics, mercurial preparations, &c. It often happens that the employment of tonics induces constipation, and for this reason it is often requisite to join to them a purgative to compensate for and prevent this effect. In the treatment of ascites and chronic dropsies generally there are cases in which it is necessary to keep up, at the same time, the strength of the patient, and to produce alvine evacuations. We attain this double object by combining tonics and excitants with drastic purgatives. The union of purgatives and narcotics is also employed with great success in the treatment of colica pictonum.

§ 34. *Two or more medicinal substances are combined to obtain effects which could not result from either taken singly.*

1st. *By uniting remedies the action of which is essentially different, and which by their union produce on the economy effects different from those they would induce, exhibited singly, without, however, acting chemically on each other.*

This effect seems inexplicable; but the instances are so numerous that we cannot doubt of its existence. We find opium and ipecacuanha, exhibited in a proper manner, produce neither the narcotic effects of the one nor emetic effects of the other; but they act as a powerful diaphoretic.

2d. *By combining together substances which act chemically on each other, produce in this manner new compounds, or which bring into full operation the active principles of one of them.*

For instance, by causing acetic acid to act on ammonia, we obtain a new product, the action of which is very different from that of either of these bodies taken singly. Dr. Rivière's anti-emetic draught, is a mixture of lemon juice and carbonate of potassa. This latter is decomposed by the citric acid, which disengages from it the carbonic acid.

3d. *By mixing substances, by which the solubility of the principles in which their remedial properties reside, is increased or diminished.* This indication can be fulfilled through the agency of substances acting chemically, or mechanically. Thus, the supertartrate of potassa or cream of tartar, becomes more soluble, and, consequently, more active, by the addition of boracic acid. Aloes acts more quickly, and irritates the large intestine less, when it is united to soap or to an alkaline salt.

§ 35. *Finally, our object, in the mixture of remedies, is frequently to impart to them a more agreeable and efficacious form.*

The substances which we mix with remedies, in order either to render their taste or their smell less unpleasant to the patient, or to prevent a too speedy spontaneous decomposition, or, in order to facilitate their action, must vary according to the nature of the remedies to be exhibited, their degree of solubility, the object we have in view, and, to a certain degree, the caprice of the patient. They ought to be chosen, however, in such a manner as that their action may not prejudice the efficacy of the principal remedies. We shall have occasion hereafter to return to this subject.

§ 36. Such are the different objects we have in view when we associate several simple remedies in order to form a compound one. According to the indication which these different substances are called upon to fulfil, they have received the name of *base, adjuvant,* or *auxiliary;* of *corrective* and *excipient* or *intermediary.* The base is the principal remedy; the adjuvant is that which facilitates and accelerates its action; the corrective is intended to mitigate the too energetic action of the base; finally, the excipient serves as a vehicle, and the intermediary, a sort of excipient, is destined to render it miscible with water.

It is often unnecessary to employ, at the same time, all these elements in the formation of a compound remedy. Several substances need no adjuvant to facilitate their action, and others may be well administered without a corrective and even without a vehicle. It happens also that the same substance answers, at once, several of these indications. The adjuvant, for instance, may serve equally as a corrective and a vehicle. These latter considerations are the more important, as simplicity is one of the most essential conditions in compounding pharmaceutical preparations.

We must never associate, in a formula, substances whose reciprocal action upon each other and whose influence upon the animal economy, are not perfectly known; and we may farther advance, as a general principle, that the more complicated a prescription is, the more uncertain are its effects. Thus, we must never combine remedies susceptible of answering in a positive manner the indications we have just mentioned, and we must always bear in mind this important maxim, *superflua nunquàm non nocent.*

§ 37. Pharmaceutical preparations are distributed into two grand classes:

1st, The *officinal preparations;* that is, those the composition of which is indicated in the pharmacopœiæ, and which are generally to be found ready prepared in all the shops.

2d. The *magistral preparations,* the composition of which is indicated by the physician, and which apothecaries prepare according to the formula given at the time,

§ 38. The *formula*, or pharmaceutical prescription, is the indication of the names and doses of the substances which are to enter into the composition of a magistral preparation; to which prescription is often added, the manner of compounding and administering it.

Clearness and conciseness are both essential in writing prescriptions. They ought to be written in a legible hand, either in Latin, or in the vulgar tongue. The sign ♃ is commonly placed at the beginning of the first line. This sign is considered as a contraction of the Latin word *recipe, take;* but in fact it is nothing else than a remains of the astrological superstitions of the middle ages. Great importance was then ascribed to the pretended influence of the planets; and therefore the symbol of the star, under the prevalence of which the remedies prescribed were collected, was put at the head of the formula. Now, the sign ♃ is that by which Jupiter was designated.

Every substance is then to be indicated by its scientific or pharmaceutic name, according as the one or the other is most generally known and least susceptible of being mistaken. The names of the remedies must always be placed under each other, taking care to write only one on the same line; the order in which they are placed is of little importance. It is better, however, to write first the most active ingredients. The designation of the dose must always follow the name of the remedy, and must be placed on the same line, leaving, however, a small interval between them. It may be written in full, but, in general, we make use of signs that custom has established, and which we represent in the following table. The quantity of each of the weights is commonly indicated by Roman cyphers. When the same dose of different substances is prescribed, they are united by a crotchet, and the word *ana* or *āā* is placed before the designation of the quantity common to both. Finally, the formula is terminated by indicating the mode of preparing the remedy, and the manner in which it is to be administered. When the preparation presents nothing particular, the pharmaceutic name which is to be given to it is simply inscribed, preceded by the letters F.S.A. (*fiat secundum artem.* Otherwise the mode of preparation is described as briefly as possible, and the date and name subscribed.

§ 39. The weights and measures used in medicine are not the same, and differ almost in all countries. As it is often of great importance in the practice of medicine to be acquainted with the real value they represent, we shall give in the following table a comparative view of the weights and measures used in England and France.

Weights and Measures used in compounding Medicines in England and France[*].

ENGLISH WEIGHTS.

Pound (Troy) ℔. = 12 ounces.
Ounce - - ℥. = 8 drachms.
Drachm - ʒ. = 3 scruples.
Scruple - ℈. = 20 grains.
Grain - - gr. = 1 grain.

ENGLISH MEASURE.

Gallon, *congius* - - - = 8 pints.
Pint, *octavius* - - O. = 16 fluid ounces.
Fluid ounce - - - f.℥. = 8 fluid drachms.
Fluid drachm - - f.ʒ. = 60 minims.
Minim - - - - ♏. = 1 minim.

FRENCH WEIGHTS.

Kilogramme = 1000 grammes = 2 metrical pounds.
Livre - ℔. = 500 - - - = 16 onces.
Once - ℥. = 31.25 - - - = 8 gros.
Gros - ʒ. = 3.90 - - - = 3 scrupules.
Scrupule ℈. = 1.30 - - - = 24 grains.
Grain - gr. = 0.05 - - - = 1 grain.

FRENCH MEASURES.

Litre, or decimetre cube - - - - - - - - - = 2 ℔s.
Chopine, or ½ litre - - - - - - - - - - - = 1 ℔.
Setier, or ¼ litre - - - - - - - - - - - = 8 ℥.
Verre, or ½ setier (glass) - - - - - - - - - = 4 ℥.
Cuillerée à bouche (table spoonful) - - - - - = 4 ʒ.
Cuillerée à café (tea spoonful) - - - - - - = 1 ʒ.
Goutte (drop) - - - - - - - - - - - - - = 1 gr.

COMPARISON BETWEEN ENGLISH AND FRENCH WEIGHTS.

English.	*French.*				
	Grammes.	Onces.	Gros.	Scrup.	Gr.
℔j.	372.96	12	1	1	13.77
℥j.	31.08	1	0	0	9.14
ʒj.	3.88	0	1	0	1.13
℈j.	1.29	0	0	0	0.37
Gr.	0.06	0	0	0	1.21

COMPARISON BETWEEN ENGLISH AND FRENCH MEASURES.

English.	*French.*
	Litre.
Cong.j.	3.7851
O.j.	0.4799
f.℥j.	0.0295
f.ʒj.	0.0039
♏j.	0.0006

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[*] The table inserted in the text is taken from the French edition. In the American edition the translators have substituted the following table :—(Editor.)

A Table of the Weights of the principal European and American Pharmacopœiæ, converted into American Apothecaries Grains and French Grammes.

United States and Foreign Pharmacopœiæ.			Apothecaries Grains.	French Grammes.
London, Edinburgh, Dublin, and the United States Pharmacopœiæ.				
℔j.	pound	12 ounces	5760.	372.96
℥j.	ounce	8 drachms	480.	31.08
ʒj.	drachm	3 scruples	60.	3.88
℈j.	scruple	20 grains	20.	1.29
Gr.j.	grain	1 grain	1.	.065
French Codex.				
℔j.	pound	16 ounces	7722.	500.
℥j.	ounce	8 drachms	482.5	32.*
ʒj.	drachm	3 scruples	63.	4.
℈j.	scruple	20 grains	21.	1.3
Gr.j.	grain	1 grain	0.878	0.05
Italian Pharmacopœia. The Italian pound consists of twelve French ounces, and is subdivided as the French pound.				
Batavian Pharmacopœia.				
℔j.	pound	12 ounces	5701.	396.12
℥j.	ounce	8 drachms	475.	30.76
ʒj.	drachm	3 scruples	59.	3.84
℈j.	scruple	20 grains	19.66	1.28
Gr.j.	grain	1 grain	0.983	0.064
Austrian Pharmacopœia.				
℔j.	pound	12 ounces	6592.	420.36
℥j.	ounce	8 drachms	549.	35.03
ʒj.	drachm	3 scruples	69.	4.38
℈j.	scruple	20 grains	23.	1.46
Gr.j.	grain	1 grain	1.150	0.072
Danish and Swedish Pharmacopœia.				
℔j.	pound	12 ounces	5501.	356.22
℥j.	ounce	8 drachms	456.	29.68
ʒj.	drachm	3 scruples	57.	3.71
℈j.	scruple	20 grains	19.	1.23
Gr.j.	grain	1 grain	0.940	0.061
Pharmacopœia of Prussia, Russia, Finland, Poland, and of several German States.†				
℔j.	pound	12 ounces	5524.	357.66
℥j.	ounce	8 drachms	460.	29.80
ʒj.	drachm	3 scruples	58.	3.72
℈j.	scruple	20 grains	19.50	1.24
Gr.j.	grain	1 grain	0.970	0.062

* The authors of the French Codex have adopted this round number, in order to facilitate the subdivision of the minor weights.

† These weights are generally known by the names of *Nuremberg*, or apothecaries weights.

§ 40. We might now examine the different pharmaceutic preparations to which remedies are submitted, and the forms under which they are administered; but, previously, we think it necessary to call the attention of our readers to the errors which may be committed in compounding magistral preparations, errors which may proceed from three principal sources, viz.—

1st. *The association of substances which cannot mix together, or form compounds of an uniform and suitable consistence.* Many substances, insoluble in water, can only be exhibited in the liquid form with the assistance of an intermediary, such as mucilage of albumen, which serves to suspend their particles. Should the physician omit to prescribe the intermediary, the formula would not produce the desired effect. The same would happen if camphor and balsam of copaiba were prescribed in the form of pills, without adding to them a suitable intermediary; for both these substances, rubbed together, assume a syrup-like consistence, and it would be impossible to form a pilulary mass if a little coagulated yolk of an egg were not added to them.

2d. *The association of substances which decompose each other, and the remedial action of which is in this manner changed or entirely destroyed.* As often as two salts in solution are mixed together, which by the exchange of their base and of their acid

MEASURES OF CAPACITY.			Apoth. Grains.	French Grammes.
London, Edinburgh, Dublin, and United States Pharmacopœiæ.				
C. Congius	Gallon	8 pints or 8 fluid lbs.	58443.	3784.
O. Octarius	Pint	16 fluid ounces . .	7305.	473.
f.℥ fluiduncia	fluid ounce	8 fluid drachms .	456.5	29.68
f.ʒ fluid drachma	fluid drachm	60 minims . . .	57.	3.71
♏. minimum	minim	1 fluid grain . .	0.9	0.061
French Codex.				
One litre or pinte . . .	℔ij.	2 French pounds	15444.	1000.
Half litre or chopine . .	℔j.	1 do. pound	7722.	500.
Quarter of a litre or setier .	℥viij.	8 do. ounces	3861.	250.
One-eighth of a litre or half setier	℥iv.	4 do. do.	1930.	125.
Cyath. or tumblerful . .	℥v.	5 do. do.	2412.	156.25
Cochl. maj. or table-spoonful	ʒv.	5 do. drachms	315.	19.50
Cochl. min. or coffee-spoon	ʒj.	1 do. do.	63.	3.90
Gut. . drop	gr.j.	1 do. grain	0.878	0.055
The Swedish Kanne, Cantharus, contains 88 Swedish ounces			40128.	2622.
The Berlin Measure contains 36 Nuremberg ounces .			16560.	1082.80

are able to form a soluble and insoluble salt, or two insoluble salts, there is necessarily a decomposition. As it would be difficult to point out here all the substances which are incompatible with each other, it is our intention to mention particularly this property when we give the particular history of each of these substances.

3d. *When the method indicated for the preparation of remedies is not sufficient to attain the object we have in view, or is of a nature to change, or to destroy, the action of the substances*

[Table shewing the difference between Minims, Drops and Grains, of various Medicinal Liquid Preparations of the Pharmacopœiæ of the United States, &c.	Number of drops in 20 minims.	Number of Minims in 20 drops.	Number of drops in 20 grains.	Number of grains in 20 drops.
Sulphuric Acid	30.	13.3	25.	16.
Sulphuric Ether	50.	8.	60.	6.
Rectified Alcohol	46.	8.6	57.	7 1
Nitric Acid	28.	14.2	22.2	18.
Acetic Acid, (christallizable)	40.	10.	40.	10.
Muriatic Acid	18.	22.2	18.1	22.
Oil of wormseed, (Chenopodium anthelminticum)	40.	10.	50.	8.
of peppermint, of aniseed of sweet almond, olive, palma christi	40.	10.	43.5	9.
of cloves	40.	10.	36.	11.
of cinnamon	40.	10.	32.	12.5
Copaiba	40.	10.	40.	10.
Diluted Alcohol	40.	10.	42.	9.5
Tincture of hydriodate of potassa of cantharides, kino, and digitalis of assafœtida, sulphuric acid, colchicum of opium, velerian, of guaicum, &c.	40.	10.	43.	9.3
(volatile) of valerian, of guaiacum	40.	10.	50.	8.
of muriate of iron	44.	9 1	50.	8.
Wine, (Teneriffe)	26.	15.3	25.	16.
(Antimonial)	24.	16.6	26.	15.3
of opium, (Sydenham's laudanum)	26.	15.3	29.	13.7
of colchicum root of colchicum seeds	25.	16.	29.	13.7
Vinegar, (distilled)	19.	21.	20.	20.
of opium (black drop) of colchicum of squill	26.	15.3	25.	16.
Water, (distilled)	15.	26.6	17.5	24.5
solution of hydrocyanic acid*	15.	26.6	17.5	24.5
sulphuric acid, (1 to 7)	17.	23.5	17.	23.5
nitric acid . do.	17.	23.5	17.	23.5
ammonia (strong)	18.	22.2	18.5	22.
do. (weak)	15.	26.6	20.	20.
hydriodate of potassa	18.	22.2	20.	20.
arsenite of potassa	19.	21.	20.	20.

* Prepared according to the process of the London Apothecaries' Hall.

employed. Some remedies are only soluble in alcohol, ether, or oil; others are soluble in water, but only with the assistance of caloric; others finally lose their active properties by the sole effect of ebullition. It is therefore of the highest importance not to prescribe an infusion in cold water of a substance which is only soluble in this liquid when warm; and likewise not to prescribe a decoction of substances which are altered by ebullition, or which lose their virtues by this means, &c. When we come to describe each substance in particular, we shall mention the menstruum which it is best to use, and the form under which it is to be exhibited.

Of the Choice of Simple Remedies.

§ 41. The composition of mineral substances being always the same, it is of little importance to the physician to know whence they come, provided they be as pure as possible; but the medicinal properties of plants, varying considerably according to many circumstances, it is necessary to detail here some general rules to be attended to in the choice we are to make of them.

All plants, in the first stage of their existence, are of a composition almost analogous; they contain scarcely any thing more than mucilage. The same happens when plants are deprived of their vivifying influence of the solar rays. In this case their leaves do not exhibit the green colour which is natural to them; they are almost inodorous and insipid; in short, they are bleached. It is, therefore, very important not to collect them at this time or in this diseased state, if it be our intention to employ the active principles they contain when they have attained their full growth, or are in a healthy state.

The annual and biennial plants must be gathered in autumn; the perennial roots, on the contrary, must be collected in the spring.

The ligneous stems contain the greatest portion of active principles before the unfolding of the buds, or after the fall of the leaves. In the herbaceous stems, the medicinal properties are, on the contrary, more concentrated after the foliation and before the blossoms appear.

Barks ought always to be taken from trees which have attained their full growth, and should be collected in the fall or spring.

Flowers ought, generally, to be collected before they are in full bloom; and as the time of their blooming varies in the various plants, we shall indicate it in the particular history of each.

As to the choice of remedial substances found in commerce, we must be guided by their peculiar character, which we shall carefully describe in the sequel of this work.

Most plants do not lose their medicinal properties by desiccation; there are some whose activity seems to be increased by this operation. But it must be carefully executed; and it has been generally remarked that the quicker this operation is performed the better. Plants may be dried either in the air, or in a warm room, according as the quantity of moisture which they contain is more or less considerable.

§ 42. It is scarcely possible to administer remedies in the same state as they are furnished by nature: their form, volume, hardness, their state of impurity, &c. prevent it. It is consequently necessary to submit them to certain preparations, either in order to change their state, or to develope and render more sensible their virtues, or finally, to impart to them some new properties by combining them with others. It is by means of comminution, extractiòn, solution, mixture and combinations, that these objects are attained.

§ 43. The mechanical division or comminution of a remedial substance may be produced; 1st, by bruising; 2d, by cutting; 3d, rasping or filing; 4th, grinding; and 5th, by pulverization.

The *bruising* of a substance is performed by means of a pestle, or any other hard body, which reduces it into fragments more or less voluminous. *Cutting*, is a division by means of a knife, or saw; that performed with the file or the rasp, is called in pharmacy *filing* and *rasping*, which, as well as *grinding*, are so many analogous operations, the purpose of which is to facilitate the extraction of the active principles by the increase of the surface of the substance in contact with the liquid, to the dissolving action of which it is submitted.

Pulverization, or the reduction of a solid body into powder, may be performed by *concussion*, *trituration*, *porphyrization*, *friction*, or by an *intermediary*. In order to pulverize very hard substances, such as woods, roots, barks, &c. we employ *concussion* or bruising; for this purpose they are put into a mortar and beaten powerfully with a pestle. Substances which are very brittle and might become soft and adherent in consequence of a higher temperature produced by a violent percussion, such as resins and gum resins, ought to be triturated or pounded in a mortar with a pestle. In the former instance, the instrument is caused to act perpendicularly; whilst, in the latter, that of pulverization by *trituration*, it is only necessary to give to it a rotatory motion on the sides of the mortar.

Porphyrization or *levigation* is an operation by means of which very hard substances, such as iron, crabs eyes, &c. are reduced to an impalpable powder, by grinding them with a muller on a table of porphyry or marble; but before subjecting them to this operation, they must be previously coarsely pulverized. When the substance which is levigated or porphyrized is not liable to be altered, or dissolved by water, a small quantity of this liquid may be added to facilitate the operation; but, on the contrary, should the substances be liable to be operated upon by water, they must be porphyrized in the dry state.

Pulverization by *friction* is accomplished by constantly rubbing on a hair sieve the substances which are to be reduced to powder. This operation is applicable only to a very small number of substances, such as magnesia, white agaric, &c., the particles of which have a very weak adhesion to each other. Finally, in order to facilitate the pulverization of several substances, it is necessary to mix with them some foreign bodies, intended either to absorb the moisture, or to interpose between their particles; this is called *intermediary*. This substance must be of such a nature as not to change either the medicinal or chemical properties of the one which is to be reduced to powder. Without an intermediary, it would be almost impossible to pulverize camphor; but with the assistance of a few drops of alcohol, nothing is more easy. Sugar is the intermediary employed to pulverize vanilla, silver leaves, &c.; finally, in order to obtain calomel in an impalpable powder, it is reduced to vapour, which is received in water.

We administer in the form of powder, 1st, insoluble substances which, during their passage through the alimentary canal, scarcely experience the alterations it is requisite for them to undergo in order to produce their therapeutic effects; 2d, substances the different active principles of which are not soluble in the same menstruum; 3d, those which would be capable of irritating powerfully the surfaces with which they come in contact, if they were not in a state of extreme division.

The degree of comminution of powders has a great influence on their *modus operandi*. Thus, as Virey remarks, unpulverized hellebore produces vomiting; whilst reduced to powder it acts as a purgative. Generally, an extreme degree of pulverization promotes the action of all substances, the active principles of which are not soluble; whilst it prejudices the activity of those, the active principles of which are of a volatile nature, or which combine easily with oxygen.

Powders may be either simple or compound.

§ 44. *Extraction* is the operation by means of which we separate from a substance one or more of its constituent parts. It is performed by *calcination*, *carbonization*, *torrefaction*, *sublimation*, *clarification*, *expression*, *washing*, *crystallization*, *inspissation*, and *distillation*.

A substance is *calcined* when it is exposed, for a certain time, to a very high temperature, in order to deprive it of all the volatile principles it contains, or which might result from the decomposition of some of its fixed principles. Thus, alum is calcined to deprive it of its water of crystallization; carbonate of magnesia, to reduce it to a state of an oxide and deprive it of its carbonic acid; hartshorn, in order to destroy all the organic substances it contains, and to obtain separately the calcareous particles.

Carbonization is a similar operation, but carried to a greater extent. It is intended to decompose the organic substance and to reduce it to a carbonaceous mass. Burnt sponge, for instance, is prepared in this way. *Torrefaction* is another process, and is only the beginning of carbonization; it is used in order to alter the properties of some substances, or to deprive them of moisture, and induce among their principles a more intimate combination. Thus, rhubarb loses by torrefaction a good deal of its purgative principle, which is volatile, and it becomes essentially astringent; whilst, on the contrary, coffee acquires more activity by the same process.

The object of *sublimation* is entirely the opposite of that of calcination; in fact the object of the latter operation is to obtain the fixed parts of a substance by expelling its volatile principles, whilst that of the former is to obtain the volatile product. This operation is performed by submitting to the action of caloric, in close vessels, the substances from which it is intended to extract the volatile principles, which condense in a solid mass at the superior part of the apparatus. Thus are prepared the flowers of sulphur, corrosive sublimate, &c.

Clarification or the separation of the insoluble particles which prevent a liquid from being transparent, may be performed by *depuration*, *filtration*, or *coagulation*. In the first of these operations, the liquid is permitted to subside without being in the least disturbed, until all the particles which were in suspension are precipitated; it is then decanted. This mode of clarification can only be used when the substance on which we operate is in large quantity; or is of a nature not likely to alter during the time necessary to complete this operation, and, finally, when its specific gravity is less than that of the particles which render it turbid. *Filtration* is a process by which a liquid is strained through a body, the interstices of which are small enough to stop the solid particles contained in it. Filters of wool, linen, paper, powdered glass, sand or charcoal, may be used, according as the liquid is more or less dense, or of a nature to operate upon any one of these bodies. Finally, clarification by *coagulation* is performed by the assistance of the albumen contained in the liquid, or by some added to it for this purpose, which albumen, by the action of caloric, of acids, &c., becomes solid, forms into a mass and precipitates the extraneous substances. The white of eggs is generally used for this purpose.

Washing is used to separate substances already pulverized and of different specific gravities. The mixture is thrown into water, stirred well and then set to rest; the heavier powder soon precipitates to the bottom of the vessel, whilst the other remains in suspension; it is then decanted. The operation may be repeated several times if found necessary.

Crystallization is an operation in which the particles of a substance, liquid or gaseous, come in contact with each other in such a way as to induce the formation of a regular solid, called *crystal*. It may be performed by the agency of caloric, or of some liquids, such as water or alcohol. In this process the crystals are deposited either at the time the liquid which is saturated with them is cooling, (and which cannot hold in suspension so much of the substance in cold as in a warm solution,) or by means of its more or less slow evaporation. This process can be used not only to purify certain substances, such as salts, but also to separate those which are not endowed with an equal degree of solubility; for the least soluble substance always crystallizes the first.

Expression is a mechanical operation, by means of which the juices contained in substances are separated from them. Sometimes it is sufficient to bruise the vegetables from which we wish to extract the juice, and to submit them afterwards to a gradual pressure; at other times it is necessary to add a small quantity of water to them.

Inspissation consists in the evaporation of a portion of water containing in solution some remedial principles; it is thus that extracts or jellies are prepared.

Extracts are preparations containing all the soluble principles of the substance out of which they are formed, and which have acquired by evaporation a consistence varying from that of honey to complete dryness. They are obtained, 1st, by evaporating the expressed juice of green plants, after having been clarified; 2d, by dissolving in any menstruum by maceration, digestion, or infusion, but never by decoction, the soluble parts of dry substances, and by submitting the product afterwards to evaporation, either in a water bath, or by the assistance of steam.

Water or alcohol is used as a vehicle; hence we have *aqueous* or *alcoholic* extracts.

Jellies are mucilaginous preparations which become liquid by the action of caloric, and which acquire again a certain consistence in cooling. They are soluble in boiling, and slightly so in cold water. They are prepared both from vegetable and from animal substances.

Distillation is a process very similar to sublimation, which we have already mentioned; it is used in order to separate liquids which evaporate at different temperatures. The forms of distilling apparatus are extremely variable; but they are always composed of two principal pieces; the one in which the liquid to be reduced to vapour is heated, the other, the temperature of which is, on the contrary, diminished in order to condense the vapours, and restore them to the liquid state. This process is performed for purifying water, for preparing the various distilled waters, alcohol at different degrees, several essential oils, and distilled vinegar. The name of distillation is likewise applied to the operation by which we decompose, by the action of caloric, several substances, such as amber and hartshorn, in order to obtain their volatile principles.

The *distilled waters* of plants are prepared by distilling water in which the plants, or some parts of them, are macerating. This liquid becomes impregnated with a certain quantity of volatile principles, which, in general, are essential oils. Thus the most fragrant plants give to water the most positive medicinal properties.

Spirits are prepared in a way similar to the preceding, except that alcohol is used instead of water as a dissolvent of the odorous volatile principles which we wish to obtain. The spirits have a weaker odour than the distilled waters; but they become very strong by the addition of a little water, which, in most cases, ought not to destroy their transparency. They are divided into *simple* or *compound*, according as they have been prepared from one or more substances.

Solution is the change of state which a solid substance undergoes by means of the comminution and disaggregation of its particles by the interposition of some liquid, without, however, experiencing any alteration in their intimate nature. The liquids employed as solvents are water, alcohol, ether, wine, vinegar, and oils.

Solution may be produced—

1st. By *maceration*, that is, by letting the liquid act, for a certain time, at a mean temperature, upon the substance which is to be dissolved.

2d. By *digestion*, an operation which only differs from the preceding by its longer duration, and by the temperature being as high as from 35° or 40° centigrade (from 95° to 104° Fahr.).

3d. By *infusion*, that is, by pouring a liquid, more or less heated, on the substance from which we wish to extract the remedial principles. The temperature and the duration of this operation varies according to the nature of the substances.

4th. By *decoction*, or by boiling, for a sufficient time, the substance in the liquid.

It is by one of these operations or processes we obtain tisans, broths, artificial mineral waters, simple or compound medicinal wines and vinegars, alcoholic and ethereal tinctures, the medicated oils, syrups, oxymels, &c.

Water, slightly charged with remedial principles, and prescribed to sick people as common drink, is called *tisan*. The action of these tisans is, generally, very trifling; and they are used only as auxiliary means. As their use is to be continued for some time, they must be changed often and rendered as little unpalatable as possible. Therefore, it is sometimes necessary to clarify and edulcorate them in order to correct their insipidity or their unpleasant taste.

Tisans are prepared by decoction, where green or inodorous substances, such as burdock, or succory leaves, &c., or when hard substances, such as barley, rice, and other seeds are used.

Dry flowers and aromatic substances are made into infusions; but when we wish to obtain both their extractive and volatile principles, we combine the two modes of manipulation.

Finally, we macerate substances soluble in cold water, such as gum, rhubarb, &c.

Apozems differ from tisans in this particular, that they are more loaded with remedial principles, and that they are never used by patients as a common drink. They are, however, prepared in the same way.

The *medicinal broths* are aqueous solutions of the proximate principles of animals, and are prepared in such a way as to be but little nourishing, and to be light and cooling.

The *artificial mineral waters* are obtained by dissolving in water gaseous or saline substances in sufficient quantity to communicate to it their medicinal properties. We generally attempt to imitate nature as much as possible in their composition.

We call *alcoholic tinctures* the solutions of the active principles of remedies in alcohol. They are always prepared by digestion in close vessels. The degree of strength of the alcohol employed for this purpose varies from 22° to 40° of *Baumé's* areometer, according to the nature of the substances upon which we wish it to act. The substances ought to be dry, in order that the water they contain in the recent state may not weaken the alcohol; they must also be bruised or powdered to facilitate the solvent action of this liquid.

Tinctures are simple or compound, according as they contain one or more substances in their composition. The proportion of alcohol employed in the preparation of tinctures varies considerably.

The *ethereal tinctures* differ from the preceding ones only in this respect, that instead of alcohol, rectified sulphuric ether is used as a solvent.

Wine acts upon remedial substances nearly in the same way as a mixture of alcohol and water, and it consequently will dissolve the active principles of a great many remedies. These preparations have received the names of *medicated wines;* they are always made with the best red or white wines. As in the preparation of tinctures, it is always necessary to use desiccated substances, unless desiccation may alter their properties, as happens in the plants called *cruciferæ;* in this case we must add a certain quantity of alcohol, in order to counterbalance the water they contain. It is always by maceration, and in close vessels, that medicated wines are to be prepared. In order to obviate the inconveniences resulting from the spontaneous decomposition of the wine, and the difference it presents with respect to the proportions of alcohol contained, Parmentier proposes to prepare the medicated wines by adding to them a fixed quantity of the alcoholic tincture of the remedial substance. Medicated wines may be either simple or compound.

When vinegar is used as a solvent of the active principles of remedies, we obtain the *medicated vinegars.* The rules we have just mentioned for the preparation of wines are applicable to vinegars.

Medicated oils are prepared by dissolving the active principles of one or more medicinal substances in a fixed or essential oil. Olive oil is the one most commonly used. Odorous substances are macerated in it; but digestion or decoction is necessary when they are in a green state.

Syrups are viscid liquids, in the composition of which we commonly use two parts of sugar to one of some liquid. It is generally water charged with the remedial principles of plants which is used in the preparation of syrups. The processes followed in the preparation of syrups vary according to the nature of the remedies employed in their composition; consequently they may be prepared with or without heat. These preparations are simple or compound.

Mellita are preparations in which honey is used instead of sugar. *Oxymels* are other species of syrups made from honey and vinegar.

§ 45. There are other compounds which can only be classified according to their degree of consistence. 1st. They are *solid*, such as *powders*, *troches* or *lozenges*. 2d. *Liquid*, as *emulsions*, *loochs*, *mixtures*, *gargles*, *collyria*, *fomentations*, *lotions*, and *injections*. 3d. *Soft*, viz. *electuaries*, *marmalades*, *pastes* and *poultices*. 4th, and lastly, *fatty*, such as *cerates*, *salves*, *ointments*, *balsams*, and *plasters*.

1st. *Of the solid compounds.*

Powders, as we have already observed, are simple or compound; the latter are made of different remedial substances, reduced to powder, either to facilitate the division or to serve as a vehicle to the principal remedy, or, lastly, to answer to the indications we have mentioned in § 30 and 31. We must never introduce into these preparations saline substances, on account of their affinity for the moisture of the air of the large quantity of water of crystallization they contain, which may spoil or alter the ingredients.

Powders are seldom administered alone. They are commonly suspended in a liquid, or incorporated with syrup or honey, in the form of electuaries or boluses.

Troches or *lozenges* are remedial substances which owe their consistence to sugar and mucilage.

2d. *Liquid compounds.*

Emulsions are magistral preparations, white and milky, composed of a certain quantity of fixed oil kept in suspension in water, by means of albumen, sugar, &c. We employ for their preparation several oily seeds, more especially sweet almonds.

The suspension in water of a fixed or volatile oil, of a resin, of a gum resin, or of a balsam, with the assistance of any intermediary, constitutes also a kind of emulsion. These preparations serve very often as excipients to substances insoluble in water, such as kermes, camphor, &c. Care must be taken never to mix with them either acids or alcohol, which would produce a coagulation.

Loochs simply differ from emulsions by the addition of a mucilage, which increases their consistence.

Juleps are compounds of a viscous and oleaginous consistence, in the composition of which enters, generally, a large proportion of syrup. These preparations are seldom prescribed as common drink; they are commonly administered in small doses and at stated periods.

Mixtures are the result of the union of several liquids, such as distilled waters, infusions, decoctions, &c. with syrups, to which are added tinctures, electuaries, salts, &c. They are only compounded liquids, well mixed together by simple agitation.

Gargles are liquid compounds, destined to act locally on the mouth or throat; but they are not generally to be swallowed by the patient. Under the name of *collyria* are comprehended all the pharmaceutical preparations intended to act upon the eyes. They may be dry, soft, or liquid; the first are impalpable powders; the second, salves, and the third are prepared with distilled water or with saline solutions.

Fomentations or *lotions* are kinds of local baths; the former are always administered warm, by means of pieces of linen or flannel, which are permitted to remain on the part for more or less time; the latter are used only to wash the diseased parts.

We call *injections* liquid remedies which are thrown into a natural or accidental cavity of the human body by means of a syringe. They are called *enemata* or *glyster* when they are intended to be introduced into the larger intestine.

3d. *Soft compounds.*

Electuaries are formed by mixing pulverized remedial substances, which are incorporated together with pulps, juices, extracts, sugar or honey. These preparations are either simple or compound. The former have received the name of *preserves*, and are made with sugar and a single vegetable substance pulverized or reduced into a pulp. The composition of the latter varies very much; they are called *confections* and *opiates* when opium becomes one of the constituent parts.

Pastes are compounds having for base gum and sugar dissolved in water, and charged with remedial principles, then dried to a consistence capable of being handled without adhering to the fingers.

Pills are small round masses, (from one to six grains) of a consistence sufficient to preserve the globular form. They are generally compounded of pulverized substances, the particles of which are united by the addition of an extract, a syrup, a mucilage, &c. This form is especially adapted for the administration of substances, 1st, possessed of an unpleasant smell or taste; 2d, capable of acting in very small doses; 3d, intended to act slowly and gradually; 4th, which are to be prevented from dissolving too easily; 5th, from acting before they have arrived in the large intestine; 6th, and lastly, the specific gravity of which is too great to be susceptible of being suspended in an aqueous vehicle. On the contrary, we must never exhibit in the form of pills, substances, 1st, which act only in large doses; 2d, which attract the moisture of the air; 3d, the consistence of which is such as not to require a large quantity of inert powder to form a pilulary mass; and 4th, which are so little soluble that, in a soluble state, they pass through the digestive canal without being altered.

Boluses differ from pills by their larger volume and less consistence.

Cataplasms or *poultices* are soft compounds, intended to be applied to the surface of the body. They are commonly made of meals, powders, boiled pulps, &c., mixed with water, milk, or any other liquid. They are called *sinapisms* when mustard forms their base.

4th. *Fatty compounds.*

Cerates are compounds of oil and wax, melted together, to which are sometimes added a small quantity of water, extract, salts, &c.; their consistence is always soft.

Liniments are preparations in which an unctuous body serves as an excipient to a more active remedy, and which are employed in frictions or embrocations on the skin.

Salves are merely lard or any other animal fat, united to some remedial principles. Vegetable or animal substances are dissolved in them: those compounded with mineral substances are, generally, simply rubbed together. Indeed, in pharmacy, we distinguish the salves made by solution, which are prepared with the assistance of caloric, from those by incorporation, which are made by trituration.

Ointments or *balsams* are the result of the combination of fatty bodies, such as lard, with a resinous substance. Their consistence is greater than that of salves; but the heat of the body is sufficient to melt them. Some salves are commonly called ointments.

Plasters, like ointments, have for their base a fatty substance; but they are solid, tough, and they stick to the skin without melting. Some are composed of wax and resin; others are the product of a chemical combination, which takes place betwixt the oleic and margaric acids, developed by the saponification of fat substances, and the metallic oxides with which they are mixed. In the Parisian codex, the former are described under the appellation of solid ointments, and the latter under that of plasters.

Finally, *Suppositories* are solid remedies, of a conical form, intended to be introduced into the rectum and to remain there for a certain length of time, to act as emollients or as purgatives. Suppositories are commonly made of ointments or salves applied to a roll of lint, or a piece of soap, cut into a proper shape, is used for this purpose.

§ 46. As to the chemical combinations, through the agency of which several remedies are prepared, we shall not now say any thing about; we shall mention them in the history of each of these substances.

Of the Classification of Remedies.

The object of every classification, in the natural sciences, is to collect and unite in groups the objects which have the greatest analogy to each other, and which have more or less resemblance in certain respects. This methodical arrangement of bodies, according to one or more of their properties, contributes greatly to facilitate study and to assist the memory; for, if the classification is good, it is sufficient to be well acquainted with one of the articles of each group in order to possess a general idea, more or less correct, of all the others. A classification to be really useful ought therefore always to be based on properties, the knowledge of which is the object of the science to which they appertain; and since, in the different branches of the natural sciences, we consider the bodies under very different points of view, it is evident that each of them requires a particular classification. The application then which some authors have made of the same classification to natural history, chemistry and pharmacology, is very improper. In fact, the object of the first is to study the exterior forms of bodies; that of the second, their elementary composition and the phenomena of their combinations; finally, the object of the third, is to acquaint us with their effects upon the animal economy; effects which have frequently no compatable relation with their physical and chemical properties.

It was soon discovered that it was impossible to succeed in arranging remedies according to a methodical order, otherwise than by establishing, for their base, the mode of action they had on the economy. But, in this classification we meet with a great number of obstacles, and the numerous classifications which have been, from time to time, proposed, are all more or less defective. The following examples will be sufficient to give an idea of the justness of our remarks. Some have arranged remedial substances according to specific virtues ascribed to them for some particular disease, and have in this manner, established the classes febrifuge, antiscorbutic, antiarthritic, antisyphilitic, &c.; others, taking for base certain secondary effects which result from the action of remedies, have established nearly as many divisions as there are curative means; and under the names of bechics, expectorants, emmenagogues, hydragogues, &c. they have collected confusedly all the substances which, upon the whole, may facilitate expectoration, excite the menstrual flux, &c., whatever may be, in other respects, their nature and primitive action upon the system.

The rapid progress which science has made since correct observation has succeeded vague or hypothetical explanations, has enabled the cultivators of this science to reject all these erroneous views. It is now acknowledged by the better informed, that the only rational basis on which a classification of remedies can be erected, are the physiological changes, effects, or results which they produce on the action of the organs. Nothing would then be more easy than to establish, according to these *data*, a classification really useful, if we were perfectly acquainted with the primary action of every remedial substance on the economy; but, unhappily, our knowledge, in this respect, is as yet very far from a state of perfection. We believe, with M. Cap, an apothecary at Lyons, whose memoir upon this subject has been crowned by the Medical Society of Paris, that in the present state of the science, it is impossible to arrive at an accurate classification of remedies. That which we have adopted in this work is therefore, very imperfect and liable to many objections; but, such as it is, we think that it may facilitate the study of materia medica, and, at the same time, that it is not divested of usefulness in the practice of medicine.

We have divided remedies, according to their primary effects, into,

1st. CAUSTICS, which, by their chemical action, disorganize parts of the body with which they come in contact.

2d. RUBEFACIENTS and EPISPASTICS, which induce inflammation of the parts to which they are applied, without disorganizing them.

3d. ASTRINGENTS, which, applied to the living parts, produce a contraction of the fibres of the tissues, and have a simple local action.

4th. TONICS, which, by their general action, have a tendency to increase the energy of the organs.

5th. EXCITANTS or STIMULANTS, which stimulate the tissue of the organs, and augment the activity and rapidity of their functions. They are subdivided into—

General: the stimulating action of which is felt by the whole economy; and,

Special: which act more especially upon one or more organs, such as the kidneys, the skin, the nervous system, &c.

6th. NARCOTICS, soporifics or stupefiers, which act specially on the nervous system, and which have a peculiar tendency to lessen its activity, or even to suspend, momentarily, its functions.

7th. EMETICS, which excite the contraction of the stomach and of the abdominal muscles, and thus produce vomiting.

8th. PURGATIVES, which induce over the internal surface of the intestines a transient and moderate irritation productive of alvine evacuations.

9th. **Laxatives**, which produce alvine evacuations; but by acting rather as emollients than as irritants.

10th. **Temperants**, which moderate the too great activity of the organs, and more especially the rapidity of the circulation.

11th. **Emollients**, which tend to soften the tissues with which they are in contact.

12th. **Anthelmintics**, which, without acting in a decided manner upon the economy, produce the death or evacuation of intestinal worms.

CHAPTER II.

CAUSTIC SUBSTANCES.

The name of *caustic*, *causticus*, (from *καιω*, I burn,) is given to substances which, by their chemical action, disorganize the parts of the body with which they are brought in contact. They are called likewise *potential cauteries*, to distinguish them from the fire, called *actual cautery*.

They were once divided into *escharotics*, (εσχαρα, *eschar*, slough,) which act powerfully; and into *catheretics*, (καθαιρεω I gnaw,) the action of which is less energetic; but this distinction cannot be any longer admitted, because the action of these bodies is susceptible of varying, and, in fact, varies according to numerous circumstances, such as their degree of concentration, the duration of their contact, &c.

Caustics, in general, act by decomposing chemically the tissues to which they are applied, by depriving them of life, and producing a real, local and circumscribed gangrene, called eschar, or slough. Those, the action of which is powerful, caustic potassa, for instance, concentrated sulphuric acid, &c. produce these phenomena with such rapidity that inflammation takes place only after the formation of the eschar; whilst, on the contrary, inflammation is the immediate consequence of the less energetic caustics. In both cases suppuration occurs sooner or later, and separates the disorganized from the surrounding parts.

Almost all the substances used as caustics have only a local action; some, however, are capable of being absorbed, and of producing their deleterious action on the economy in general; arsenical preparations afford an instance of this effect.

The employment of caustics is now confined to a small number of cases. The actual cautery, or the knife, are, in general, preferred to them. They are used principally to establish issues, particularly in cases in which it is necessary to produce a powerful derivation; to stop the progress of certain gangrenous affections, such as *anthrax;* to open certain indolent abscesses; to change the mode of vitality of the skin in some cancerous or herpetic ulcers; to destroy the excrescences of wounds or proud flesh; and, finally, to prevent the absorption of the virus deposited at the surface of poisoned wounds.

Caustic Potassa. *Potassa fusa. Lapis causticus.* Impure hydrate of protoxide of potassium. Caustic kali with lime. Common caustic.

P. P. Flat, irregular, brittle pieces, or round sticks, like the nitrate of silver; of a grayish-white, sometimes reddish; of a savour extremely caustic, and a slight odour *sui generis.*

C. P. The caustic potassa is composed of protoxide of potassium 100 parts; water 25; besides a little sub-carbonate, sulphate, and hydrochlorate of potassa, of silica, &c., it possesses alkaline properties in the greatest degree; that is, it converts the colour of syrup of violet into green, restores the blue colour of the tincture of litmus reddened by an acid; it reddens turmeric paper, or the yellow vegetable colours; exposed to the air it attracts quickly carbonic acid and moisture from the atmosphere, and is thus converted into a very deliquescent sub-carbonate. It is is very soluble in water and alcohol, combines with fatty substances, and forms with them soft soaps; finally, it fuses below red heat.

Prep. Treat the potassa of the shops (impure sub-carbonate of potassa), dissolved in twelve or fifteen times its weight of water, with an excess of quick-lime; filter the liquor; evaporate rapidly, fuse, and pour out on a marble slab, or into iron moulds; when it becomes hard, break it and keep it in well-stopped bottles.

Th. E. This substance is extremely caustic; it decomposes quickly the parts with which it is put in contact, and it leaves on the skin a soft grayish eschar, which comes off slowly. Advantage is taken of this action to establish issues, to open indolent abscesses, or such as are accompanied with induration of the surrounding parts, to cauterize poisoned wounds, &c. Taken internally, it acts in the same way as all corrosive poisons; it has, nevertheless, been administered, in very dilute solutions, as an antacid, diuretic, and lithontriptic. It has succeeded in the gravel, in nephritic colics, and other affections proceeding from superabundance of uric acid. It has been recommended likewise in the treatment of scrofula and in some diseases of the skin, such as leprosy, &c. This solution, even when much diluted, soon irritates the stomach, and brings on anorexia, which prevents it from being used for any length of time.

D. & M. of Adm. *As a caustic*, a piece of the size of a lentil. *Internally, Liquor Potassæ*, L., E., D., P. (Caustic potassa, 1 part; distilled water, 10.) From ♏. v. to xx. in ℥vj. of mucilaginous menstruum. *Tinctura Kalina*, Pol. (Caustic potassa, 1 part; rectified alcohol, 6.)

Caustic Soda. *Soda.* Protoxide of sodium. Its physical properti [illegible] ilar to those of potassa, and it may be used with advantage as a succedaneum when employed as a caustic. In fact, the sub-carbonate which forms during its action on the skin, is not deliquescent like that of potassa, and consequently is not subject to spread.

MELTED NITRATE OF SILVER. *Nitras argenti fusus.* Lapis infernalis. Lunar caustic. Not to be found in nature.

P. P. Small cylinders, two or three inches long, of the size of a quill, of a gray or dark colour, lighter within, inodorous, and of an extremely caustic, bitter and metallic taste. When broken, they present a number of small whitish crystals, disposed in rosets or in a radical form.

C. P. This salt is formed of nitric acid 100, and silver 214.38, it is not deliquescent unless it contain a small portion of copper; it is soluble in its weight of water at 15° Centig. (59° Fahr.;) crystallizes in thin scales, white and semitransparent; light turns it black; it is fused at a moderately high temperature, and is decomposed at a red heat; its solution colours the skin, in a permanent manner, of a brown or deep violet colour.

INCOMP. SUBST. Fixed alkalies, hydro-chloric, sulphuric and tartaric acids, soaps, arsenic, hydro-sulphates, vegetable astringent infusions, &c.

PREP. Treat the metallic silver with pure nitric acid; melt the salt thus obtained in a crucible, over a slow fire, until all the water is evaporated. Then pour the fused nitrate into proper moulds slightly rubbed with tallow. The dark colour which lapis infernalis sometimes acquires, is owing to a small quantity of oxide of silver, or of the metal rendered free by the decomposition of the unctuous substance used. The crystallized nitrate of silver is white.

TH. E. It is the best of the catheretics; therefore it is the one which is most frequently used: this substance acts slowly upon the skin, but very quickly on granulations; the irritation it causes is of short duration; the eschar is thin, dry and grayish; it is not absorbed. It is used to stop the growth of fungous flesh; to prevent strictures of the urethra, and those of the nasal passages, as has been recently proposed; to induce cicatrization in ulcers of the cornea, in old fistulous passages, in obstinate ulcers, and indolent chancres; its powder applied to hospital gangrene stops its progress, and a cure is obtained; dissolved in water, it is recommended as an astringent collyrium in some cases of chronic ophthalmia. Finally, it has been recently used to cauterize the pustules of small pox in order to stop their progress; and according to Dr. Serres, to prevent the inflammation of the meninges of the brain, which so often renders variola so complicated. This mode of treatment has received the appellation of the *ectrotic* method. Administered internally and in large doses, the nitrate of silver is a very active corrosive poison; in small doses it produces a heat in the epigastrium, colic, vertigo; and often, after a certain lapse of time, it alters the colouring of the skin to blue or brown; it appears moreover to increase the urinary secretion. It has been used in epilepsy, angina pectoris, and other nervous diseases. It is however a very dangerous medicine, and must be used with the greatest caution when exhibited internally.

D. & M. of Adm. *As a caustic*, any quantity. *As a collyrium*, gr. j. to distilled water, ℥ij. *Internally*, one-tenth to one-fifth of a grain, two or three times a day, increasing by degrees to twelve or fifteen grains. *Pills of nitrate of silver*, Paris H. (Nitrate of silver gr. iij; gummous extract of opium, ʒss; musc, ℈j; camphor, ℈ij; for 48 pills.) Two or three pills a day.

Butter of Antimony. *Deuto-murias stibii sublimatus.* Chloride of Antimony. Muriate of Antimony. It is always the product of art.

P. P. Thick, unctuous, white; semitransparent, inodorous and of a very caustic taste.

C. P. Composed of antimony 100 and chlorine 80; exposed to the air it becomes yellow and attracts moisture; it melts below 100° Centig. (212° Fahr.), and volatilizes a little above this temperature; and on cooling, crystallizes in tetrahedral prisms. Water decomposes and transforms it into an insoluble sub-hydro-chlorate of antimony called *Algarotti's powder*.

Prep. Heat is gradually applied to a glass retort, into which have been introduced three parts of pure metallic antimony and eight parts of perchloride of mercury. The butter of antimony sublimes and condenses in the neck of the retort.

Th. E. This caustic acts speedily and with energy; it produces dryer eschars, and spreads less than potassa. It is employed principally to cauterize narrow snd sinuous wounds, such as those resulting from the bite of rabid or venomous animals. The powder of Algarotti was formerly administered internally, as an emetic; but this medicine, the action of which is very uncertain, is now no longer employed.

M. of Adm. It is applied by means of a camel hair pencil, or a dossil of lint. The blood must be first carefully removed, for this fluid rapidly decomposes the chloride of antimony.

White Oxide of Arsenic. *Oxidum arsenici album.* Arsenious acid. Deutoxide of arsenic. It is found in nature, but in small quantities, in different parts of Europe.

P. P. Vitreous masses, compact, brittle, transparent, without colour, or of a pale yellow when they have not been exposed to the action of the air; but semitransparent and even opaque when they have been exposed to its action; inodorous, of an acid and corrosive taste, leaving on the tongue a sweetish taste; of the specific gravity of 3.73 when they are transparent, and only 3.69 when they are opaque.

C. P. This oxide is composed of arsenic 100, and oxygen 41.89. It is soluble in 13 of boiling and 400 of cold water; alcohol and oils dissolve also a small quantity of it; thrown upon burning coals, it volatilizes with a white and thick smoke of a garlic smell; heated with charcoal and a little potassa or soda, it decomposes, and the metallic arsenic is sublimed.

Prep. By roasting the ore of arsenical cobalt coarsely pulverized, this oxide volatilizes and condenses on the inside of the tube or chimney. A second sublimation purifies it.

Incomp. Subst. Lime water, hydro-sulphate of potassa, decoction of barks generally.

Th. E. Applied externally, it is a powerful caustic, used in the treatment of cancerous ulcers, and principally in those of the skin of the face; but its application requires the greatest caution, on account of the fatal accidents which might occur from its absorption. Internally, it is one of the most violent poisons. It produces the most excruciating colics, vomiting of blood, cold sweats, trepidation, &c. However, several English physicians, and among them Dr. Fowler, have administered it, in very small doses, in intermittent fevers, cancerous affections, some cutaneous affections, periodical headaches, chronic rheumatism, &c.; but its use is attended with great danger.

D. & M. of Adm. *Externally. Rousselot's caustic paste, amended by Dubois*, P. (Oxide of arsenic 1; red sulphuret of mercury 16; dragon's blood 8;) as much as necessary to cover the ulcer This powder is rendered moist with a little gum water, in order to form a paste.——*Internally*, one-sixteenth to one-eighth of a grain in pills, or dissolved in ℥j. of milk and water or a gummy solution.

Red Oxide of Mercury. *Oxidum hydrargyri rubrum.* Nitric oxide of mercury. *Hydrargyri nitrico oxidum.* Deutoxide of mercury. Red precipitate.

P. P. Masses formed of small shining scales of an orange red, producing a powder of a light yellow colour when it contains water, and of a yellow-red colour when it is anhydrous; inodorous, of a caustic and metallic taste.

C. P. It contains mercury 100 and oxygen 8 parts. It is slightly soluble in water, and this solution turns the syrup of violet to a green colour; at red heat it decomposes, and the mercury volatilizes.

Prep. It is obtained from the decomposition of the nitrate of mercury; or by heating some mercury in contact with air, in a vase with a very narrow neck, for a lapse of ten or fifteen days, at the temperature of ebullition.

Th. E. This substance has been exhibited internally by some very celebrated English practitioners in syphilitic diseases. It is, however, very apt to occasion vomiting, purging, and otherwise to affect violently the stomach and bowels; consequently, it is now scarcely ever exhibited internally, or employed as an antisyphilitic. It is used externally as an escharotic and stimulant; to reduce fungous fleshy excrescences, to excite certain syphilitic ulcerations, and principally to reduce chronic ophthalmia, maintained by the ulceration of the free margin of the eyelids. It must be remembered that it is susceptible of being absorbed, and of producing very serious accidents.

D. & M. of Adm. *Internally*, L. In powder, one-eighth of a grain to one grain, combined with half a grain of opium, in the form of a pill, night and morning.

Externally. *Unguentum hydrargyri nitrico-oxidi*, E. U. S. (Nitric oxide of mercury, one part; lard, 8 parts.)—L. (Red oxide of mercury, one part; white wax, two parts; lard, six parts.—D.) (Ointment of white wax, ℔ss.; red oxide of mercury, ℥iss.)——*Regent's ophthalmic salve*, P. (Deutoxide of mercury, acetate of lead, and pulverized camphor āā. one part; washed fresh butter, eighteen parts.) ——*Unguentum hydrargyri rubrum*, B. (Deutoxide of mercury, one part; axungia, thirty-two parts.)—Pr. (Deutoxide of mercury, one part; rose ointment, ten parts.——*Dr. Dupuytren's eye salve*. (Red oxide of mercury, gr. x.; sulphate of zinc, gr. xx.; axungia, ℥ij.)

Sulphate of Copper. *Cupri Sulphas*. Deuto-sulphate of copper. Blue vitriol. It exists in nature, dissolved in the waters of some mineral springs.

P. P. Four or eight-sided prismatic crystals, transparent, of a fine blue colour, slightly efflorescent, inodorous, of a styptic taste, and of the specific gravity of 2.1943.

C. P. This salt is composed of sulphuric acid 32.14; oxide of copper 31.81; water 36.06; it is soluble in 4 of cold and 1 of boiling water. This solution reddens litmus; heated, it melts in its own water of crystallization, and becomes white; at a higher temperature it is decomposed.

Prep. Let the native or artificial sulphuret of copper be roasted slowly, and the product be exposed to the action of the moisture of the air for a length of time; then lixiviate and evaporate the liquor, and reduce to a crystalline point.

Th. E. It is employed to cauterize certain fungous, fleshy excrescences, or applied to stimulate ill-conditioned ulcers, atonic venereal chancres and aphthæ, &c.; dissolved in water, it is useful as a styptic in external hæmorrhage, and, as a stimulant in leucorrhœa, blennorrhœa, and chronic ophthalmia kept up by the atony of the mucous membranes. Taken internally, it irritates powerfully the gastro-intestinal surface, causes colics, frequent vomiting, bloody alvine discharges, hiccoughs, convulsions, &c. It is administered in small doses as an emetic in cases of poisoning, and as a stimulant in some catarrhal affections, epilepsy, chorea, intermittent fevers, and in the first stage of certain kinds of phthisis. This very dangerous medicine is now very much out of use.

D. & M. OF ADM. *Internally*. As an emetic, gr. j. to iv. dissolved in water ℥iv. As a tonic and stimulant, gr. ⅛ to ¼ a day, and even more, but gradually, in solution or pill.

Externally. In substance, in lotion or injection, ℈j. to ʒj.; dissolved in water, ℔j.——*Cupri sulphatis liquor*. U. S. (Sulphate of copper, gr. iij.; sulphuric acid, ♏x.; distilled water, ℥ij.)——*Solutio sulphatis cupri composita*, E. (Sulphate of copper, alum, āā. three parts; sulphuric acid, 1.5; water, 32.)——*Lapis divina*, P.——*Cuprum aluminatum*, POL. (Sulphate of copper, nitrate of potassa and alum, āā. 24; camphor, 1.) ʒj. to water ℔ij.

VERDIGRIS. *Acetas cupri crudus*. Impure acetate of copper, *ærugo*.

P. P. A powder of a bluish-green colour, without odour, and of a strong styptic taste.

C. P. It is composed of neutral acetate of copper 43; hydrate of deutoxide of copper 37.5; water 15.5. Water dissolves the acetate of copper, and separates it from the oxide.

PREP. By permitting some plates of copper to remain for a length of time in contact with the residue or grounds of pressed grapes.

TH. E. Applied externally it is used to check the growth of fungous flesh; to destroy syphilitic excrescences; to cauterize certain atonic and carcinomatous ulcers, &c. Its action, internally, is like that of the sulphate of copper, but it is less violent; it has been proposed as an excitant in scrofulous and cancerous affections; but is now almost abandoned, in consequence of its deleterious effects.

D. & M. OF ADM. *Internally*. As an emetic gr. j. to ij. As a *stimulant*, gr. ⅛ to ¼. *Externally*. *Egyptiac ointment*, P.——*Linimentum æruginis*, L., D.——*Oxymel æruginis*, DBN. (Honey, 14; acetic acid, 7; verdigris, 5 parts.)——*Ceratum æruginis*, PR., DBN. (Wax, 12; resin, 6; Venice turpentine, 4; verdigris, 1 part.)

CAUSTIC WATER OF AMMONIA. *Aqua ammoniæ caustica*. *Liquor ammoniæ*. Caustic liquor of ammonia. Solution of ammoniacal gas in water.

P. P. Colourless liquid, transparent, of a very penetrating odour, *sui generis*, of a caustic taste, having a variable specific gravity according to the proportions of ammoniacal gas it contains; that of the pharmacopœiæ of London, 0.960; Edinburgh and United States, 0.939; Dublin, 0.934; and that of the French codex 0.903, and marks 22° of Baumé's areometer.

C. P. The ammoniacal gas is composed of nitrogen 1, and hydrogen 3, in volume; at the ordinary temperature, water dissolves 430 times its volume; this solution contains ammoniacal gas 25.37, and water 74.63; it turns the syrup of violets green; slightly heated, the gas is all disengaged; it forms salts with the acids.

Prep. Heat in a retort equal parts of lime recently slaked and of pulverized hydrochlorate of ammonia, and cause the disengaged gas to pass through water.

Incomp. Subst. Acids, metallic salts and alum.

Th. E. Applied on the skin, caustic water of ammonia produces immediately a lively pain, some redness, phlyctenæ, and even an eschar whenever it is permitted to remain any time. It is commonly employed as a rubefacient in chronic rheumatisms, in recent engorgements of the mammæ, cold tumours, neuralgiæ, hooping cough, angina, &c. It is also employed (Dr. Gondret,) in order to disorganize the skin in a slow and painful manner in some affections, in which a strong revulsion is indicated; it is likewise used to cauterize the bite of venomous animals, and the sting of venomous insects. Concentrated, and in large doses, it acts as a very violent irritating poison; diluted with water, as a very energetic stimulant and diaphoretic. It is administered with success in some peculiar cutaneous eruptions, difficult to cure or suddenly suppressed; in ataxic fevers, in chronic rheumatisms; finally, in syncope, the gas disengaged from this solution is inhaled in order to irritate the pituitary membrane.

D. & M. of Adm. *Externally.* As a CAUSTIC, upon a piece of linen. As a RUBEFACIENT, *linimentum ammoniæ*, U. S., D. (Water of ammonia and olive oil āā. equal parts.)——*Linimentum ammoniæ fortius*, L.——*Sapo ammoniæ fortior*, B. (Liquor ammonia, 1; olive oil, 2 parts.)——*Oleum ammoniatum*, E. (Water of ammonia, 1; olive oil, 8 parts.)——*Linimentum ammoniatum*, P., F., Pol. (Olive oil, 3; water of ammonia, 1.)——*Linimentum volatile*, A., R., Den. (Water of ammonia, 1; sweet oil, 4.)——*Camphorated volatile liniment*, Paris H. (Camphor and water of ammonia, āā. 1; olive oil, 16.)——*Linimentum ammoniæ et antimonii tartarizati*, U. S. (Liniment of ammonia, 8; tartarized antimony, 1.)——*Linimentum camphoræ compositum*, L. (Camphor, ℥ij.; solution of ammonia, f.℥vj.; spirit of lavender, 0j.)——*Dr. Gondret's ammoniacal caustic*, (Caustic water of ammonia, 2; tallow and sweet oil, āā. 1.)——*Aqua ammoniæ diluta*, E. (Water of ammonia, 1 part; distilled water, 2 parts.)

Internally. ♏.xx. to xl. in four ounces of liquid.——*Eau de Luce*, P.——*Spiritus ammoniæ succinatus*, L. (Water of ammonia, 16; tincture of Mecca balsam and oil of amber, āā. 1.——*Alcohol ammoniatum*, U. S., E.——*Spiritus ammoniæ*, L., D.——*Tinctura ammoniata aromatica*, U. S. (Ammoniated alcohol, f.℥viij.; oil of rosemary, f.ʒiss.; oil of sassafras, f.ʒj.)——*Spiritus ammoniæ aromaticus*, L. (Cinnamon, cloves, āā. ʒij.; lemon peel, ℥iv.; sub-carbonate of potassa, ℥viij.; muriate of ammonia, ℥v.; rectified spirit, 0iv.; water, 0j.; mix and distil over six pints.)——*Alcohol ammoniatum aromaticum*, E. (Ammoniated alcohol, f.℥viij.; oil of rosemary, f.ʒjss.; oil of lemon, f.ʒj.) The dose is from f.ʒss. to j. in any convenient vehicle.——*Spiritus ammoniæ*, Pol., F. (Strong water of ammonia 1; alcohol, 3.) Same doses as the preceding.——*Liquor ammoniæ anisatus*, Pr., Pol. (Water of ammonia, 6; oil of aniseed, 1; alcohol, 24.) ♏.xx. to xxx.

The concentrated mineral acids, the deuto-chloride, the deutoiodide and the pernitrate of mercury are also powerful caustics, and are used occasionally; but as these substances are endowed with other and more important properties, we shall describe them in their respective places.

CHAPTER III.

EPISPASTICS AND RUBEFACIENTS.

THE rubefacient substances are those which, applied to the skin, produce redness and other symptoms of slight inflammation. When this action is more energetic, or of a longer duration, rubefaction is attended with the secretion of serous matter, which accumulates under the epidermis, detaches it, and induces the formation of vesicles or vesications, called *phlyctenæ;* phenomena very similar to those of a slight scald. Substances endowed with this action are called vesicants or epispastics, from επισπαω, I draw. Thus, these different names designate only the different degrees of a single physiological action.

Although the immediate action of the greatest part of these substances is merely local, they sometimes produce a general excitation more or less lively; but in this case the effects are only sympathetic, and do not proceed from the influence of the vesicating substance on the general system. However, some of them may be absorbed, and occasion some general effects, independent of any sympathetic influence.

It is almost always in order to remove an irritation settled upon an important organ, and to transfer it, as it were, to the external surface; in short, it is to produce a derivation that we resort to the artificial inflammation of the skin, and that we keep up the purulent discharge which follows for a greater or shorter time.

In some cases the stimulating properties of vesicating substances are resorted to in order to prevent prostration of strength and other adynamic or asthenic symptoms.

VESICATING SUBSTANCES DERIVED FROM THE ANIMAL KINGDOM.

SPANISH FLY. *Cantharis vesicatoria,* Geoffroy. *Melo vesicatoria,* Lin. *Lytta vesicatoria,* Fabricius. Insecta coleoptera, section of heteromeres, family of the trachlides. Very common in Spain, Italy, and France, where it is found in large families, on the fraxinus, lilac, elder, &c.

P. P. Cantharides have a body from six to ten lines long, the antennæ or feelers black, filiform, composed of twelve articulations; the elytra long, flexible, of a shining golden green, and the tarsi of a deep brown. Their odour is strong, penetrating, unpleasant and peculiar, and their taste extremely acrid; their powder is of a brownish gray, intermixed with shining particles of a metallic green colour.

C. P. They contain, according to Robiquet, a peculiar substance, called *cantharidine*, a green oil, a black insoluble substance, and a green one, soluble in water; some uric and acetic acids, phosphates of lime and of magnesia, and, according to Orfila, a volatile oily principle, in which their odour seems to reside.

Cantharadine, the vesicating principle of these insects, is white, in small crystalline scales; insoluble in water and cold alcohol; soluble in ether, boiling oils and alcohol, from which it precipitates by cooling.

Oil of turpentine dissolves cantharidine without removing the black and yellow substances designated in the analysis of M. Robiquet as inert, and without being sensibly impregnated with the extremely nauseous volatile substance noticed by M. Orfila.

When cantharides have been subjected to oil of turpentine at 212° Fahr., separated by filtration while warm, and the oil of turpentine reduced by distillation in a water bath, alcohol having been added to the filtered oil of turpentine to facilitate its removal, granular crystals will deposit on the sides of the vessel containing the menstruum when it is cold and sufficiently reduced. These crystals are possessed of great activity; a quantity exceedingly small, not more than could be held on the point of a needle, when rubbed on the wrist, produced a blister of a diameter corresponding to the surface to which it was applied.

The vesicating properties could be extracted from cantharides by oil of turpentine, and probably a satisfactory ointment be prepared, by merely evaporating the oil of turpentine at a moderate temperature.

Prep. The cantharides are killed by immersing them in vinegar diluted with water, and then dried carefully.

Th. E. Spanish flies are, of all the vesicating substances, those which are most commonly used. Their action is principally confined to the skin; however, their active principles may be absorbed and may cause serious accidents. Thus, the application of a blister is often followed by strangury, hæmaturia, priapism, &c. Taken internally, they act as a most energetic acrid poison; but, besides the very lively irritation which they produce on the gastro-intestinal surface, they have, very evidently, a special action upon the genito-urinary organs, which they stimulate violently. Notwithstanding their extreme acrimony, they are administered in small doses as very energetic stimulants in some cases of palsy of the bladder, and in the cure of incontinence of urine, anaphrodisia or want of venereal passion, hydrophobia, and in certain cutaneous diseases; but experience does not seem to justify their employment in the latter diseases. However, it is a very dangerous medicine, the use of which requires the greatest caution and care on the part of the physician.

D. & M. OF ADM. *Externally.* As an epispastic, any quantity in powder spread over the blistering plaster.——*Ceratrum cantharidum*, U. S. (Yellow wax, pine resin; olive oil, āā. 2 parts; cantharides in powder, 3 parts.)——*Emplastrum cantharides.* L. (Cantharides, ℔j.; wax plaster, ℔jss.; axungia ℔j.)—E. (Mutton suet, wax, white resin, cantharides, āā. equal weights.)—D, (Yellow wax; mutton suet, āā. ℔j.; yellow resin, ℥iv.; cantharides, ℔j.)——*Blistering plaster*, P. (Cantharides, 125; white resin, 280; yellow wax, 180; Venice turpentine, 80.)——*Emplastrum cantharidum*, R. (Cantharides, Venice turpentine, āā. 32; wax, 96; camphor, 3.)—PR., DEN., POL., F. (Cantharides, 2; turpentine and oil, or axungia, āā. 1; wax, 4.)——*Emplastrum perpetuum*, PA., DEN., POL. (Turpentine and resin, āā. 6; cantharides, 2; resin euphorbium, 1.)——*Emplastrum resinosum cantharidum*, U. S.——*Emplastrum calefaciens*, D. (Cerate of cantharides, 1 part; Burgundy pitch, 7 parts.)——*Issue paper*, P. (Cantharides, myrrh, euphorbium and mezereon bark, āā. equal parts.)——*Unguentum cantharidum*, U. S., L. (Cantharides, 2; distilled water, 8; resin cerate, 8.)——*Green epispastic ointment*, P. (Cantharides, 8; populeum ointment, 210; wax, 32; verdigris and extract of opium, āā. 3.)——*Yellow epispastic ointment*, P. (Cantharides, 15; lard, 202; water and wax, 31; turmeric and essential oil of lemon, āā. 1.)——*Unguentum infusi cantharides*, E. (Cantharides, resin, yellow wax, āā. 1 part; Venice turpentine, hog's lard, āā. 2 parts; boiling water, 4 parts.)——*Ceratum cantharides*, L., PR., POL. (Spermaceti cerate, ʒvj.; cantharides, ʒj.)——*Oleum cantharidis*, P. (Cantharides, 1; olive oil, 8.)——*Camphorated liniment of cantharides*, P. (Tincture of cantharides, P., 8; oil of sweet almonds, 64; almond soap, 16; camphor, 1.)

Internally. Pulvis cantharidis, gr.j. to iij. in pills.——*Tinctura cantharidum*, U. S., L. (Cantharides, ℥iij.; diluted alcohol, Oij.)—E. (Cantharides, ʒj.; proof spirit, Oj.)—D. (Cantharides, ℥ij.; cochineal, ʒss.; proof spirit, Ojss.)—P., B. (Cantharides, 1; alcohol, 8.) This tincture contains 1-55th of soluble principles; it is administered in the dose of ♏.iv. to x. in an emulsion.—PR., F., POL. (Cantharides, 1; alcohol, 24.)—R. (Cantharides, 1; alcohol, 12.)—A. (Cantharides, 1; alcohol, 6.) The dose of these tinctures varies according to their strength.

POTATOE FLY. *Lytta vittata.* Besides this species of blistering fly, there are four others belonging to North America, viz. *Lytta aratra*, *L. marginata*, *L. cinerea*, and *Meloe niger.* The first is smaller than the Lytta vesicatoria, or common Spanish fly. Its head is of a light red colour, with black antennæ; the elytra, or wing cases, are black, with a pale yellow margin, and a stripe of the same colour extending along the middle of them; the mouth is armed with jaws furnished with five articulated tarsi. The abdomen of this fly contains a hard white substance about the size of a grain of wheat, which, when powdered, appears like meal, and when rubbed with water forms a milky emulsion.

Dr. J. Chapman was the first who publicly noticed the vesicating properties of this species of lytta, as being equal, if not superior to the Spanish fly in its medicinal virtues. The experience of many other practitioners has proved that whether used as an external application, or exhibited internally, the potatoe fly produces the same results, and that its vesicant effect is even much more prompt. Neither age nor pulverization impair the properties of the Lytta vittata, when it has been carefully kept. Dr. Gorham, of Boston, states that, in an extensive series of experiments with this fly, he found it equal, if not superior, for external applications to the Meloe vesicatoria, and that he had exhibited the saturated tincture internally, in many cases of diminished sensibility of the urinary organs, in gleets, and as a diuretic in dropsy, with the same successful results. In all cases they increased the discharge of urine, and produced a considerable irritation in the urethra, and at the neck of the bladder.

This insect appears on the potatoe plant or vines, about the end of July or the beginning of August. It inhabits the soil close to the plant; it ascends in the morning and afternoon, but generally avoids the heat of the sun at noon.

VESICATING VEGETABLE SUBSTANCES.

Family Thymelææ.

Mezereon. *Cortex gnidii,* Mezereon bark. *Daphne gnidium,* Lin. This shrub grows in England and France, in dry and uncultivated places. P. U. The bark.

B. C. Leaves lanceolate, acute; flowers white, odorous; fruit, a globular berry, dry and blackish.

P. P. Thin, tenacious slips, two or three feet long, gray externally, yellow internally, covered with a silky down, and whitish spots at small intervals; of a faint and nauseous odour, and of a very acrid taste.

C. P. Mezereon seems to be indebted for its vesicating properties to a peculiar substance called *Daphnine,* discovered by Vauquelin in the *Daphne alpina.* This substance is volatile, soluble in water; its taste, scarcely perceptible at first, is by degrees developed, and it becomes very acrid. The bark contains besides, a lignous substance and several salts.

Th. E. It is used externally to produce issues in cases where the too violent action of cantharides on the genito-urinary organs is to be apprehended. It has been exhibited internally as a stimulant and diaphoretic, in herpetic affections, scrofula, constitutional syphilis, and chronic rheumatism.

D. & M. OF ADM. *Internally*. Powder, gr.j. to x.——*Decoctum mezerei*, U. S., D. (Mezereon, ʒij.; liquorice root, ℥ss.; water, Oiij.)
Externally. As a blister, a piece macerated in vinegar, and applied to the skin. ——*Mezereon ointment*, P. (Mezereon, 4; axungia, 10; wax, 1.)——*Unguentum mezerei*, POL. (Mezereon, 18; axungia, 96; wax, 16; oil of lemon, 1.)

The *Daphne mezereum* and *D. laureola* are very often mixed with the *Daphne gnidium*, and sold for such. However, they possess nearly the same properties.

LEATHER-WOOD. MOOSE-WOOD. *Dirca palustris*, Lin. A shrub, from five to eight feet high, native of North America, and growing near streams and in shady swamps. P. U. The bark.

B. C. Stem branching, spreading; flowers, peduncle bearing a fascicle of three yellow flowers; perigone tubular, border obsolate; stamina exserted, style filiform; fruit, berry one-seeded.

TH. E. The bark of this shrub is said to produce a blister as well as the other species of the family *Daphnideæ*.

Family Cruciferæ.

MUSTARD SEED. *Sinapsis nigræ semen. Sinapsis nigra*, Lin. Annual plant, indigenous to Europe, growing in wet places, and cultivated on a large scale in several parts of Europe.

P. U. The seeds.

B. C. Stem herbaceous, cylindrical, two or three feet high; leaves lyrate, large sessile, smooth; flowers yellow, small, disposed in spikes; calix spreading, petals straight; fruit, a slender tetragonal silique.

P. P. Mustard seed is spheroidal, externally of a brownish-red; internally of a lively yellow colour, of a sharp and slightly bitter taste; inodorous when not comminuted; it acquires a strong and very penetrating smell when bruised in water, and gives rise to a peculiar volatile principle, which powerfully irritates the eyes.

C. P. According to Thibierge, it contains, 1st, a fixed oil of a greenish yellow colour, soluble in alcohol; 2d, a volatile oil of a slight yellow, heavy, of an acrid and sharp taste, soluble in water, and containing sulphur; 3d, vegetable albumen; 4th, mucilage; 5th, sulphur; 6th, nitrogen; and, 7th, calcareous salts. The active principle of mustard seems to reside in the volatile oil. The fixed oil contains, according to Garot and Henry, a fat substance, analogous to cholesterine; a red colouring matter, and a crystallizable acid, which they have called *sulpho-sinapic*.

Th. E. Mustard seed is daily employed externally as a rubefacient, and even as a blister, when cantharides are improper to be used, or when a more speedy action is desirable. Its employment internally, as a condiment, is too well known to deserve to be noticed here. It possesses powerful stimulating properties. It has been recommended, mixed with bark, in intermittent fevers, dropsy, and chlorosis. Taken internally, without being pulverized, it is said to have succeeded in dyspepsia, and in obstinate costiveness.

D. & M. of Adm. *Internally*. Mustard seeds, swallowed entire from ℥j. to ij. Bruised seeds, ʒij. to ℥ss.; boiled in milk Oj., and strained to separate the curd.

Externally. *Cataplasma sinapis*, L. *Cataplasma sinapeos*, D. (Mustard seed, linseed, or crumb of bread, āā. equal parts; vinegar, a sufficient quantity. *Sinapisms*, Paris H. (Mustard seed pulverised, any quantity; vinegar, a sufficient quantity.) *Pediluvium sinapis*, Paris H. (Meal of Mustard seed, ℥iv. to viij.; hot water, a sufficient quantity.) *Mustard enema*, from one to three teaspoonfuls.

Euphorbium. *Gummi-resina Euphorbium*, a concrete juice of the *Euphorbia antiquorum, officinarum et canariensis*, Lin., which grows in Africa and in the Canary Islands, is endowed with an excessive acridity, and irritates violently the parts with which it comes in contact. It is in irregular drops, of the size of an English pea, yellowish, semitransparent, having commonly one or two holes, inodorous, at first without taste, but soon after producing a corrosive and burning taste. According to Pelletier, this substance is composed of sixty parts of a very acrid resin, insoluble in caustic alkalies; wax, fourteen; malate of lime, twelve; malate of potassa one; bassorine, lignous substance, volatile oil, &c., ten. Thrown on burning coals, it consumes with an agreeable smell; water dissolves but one-seventh, alcohol one-fourth, and ether three-fifths.

The excessive violence of its action, and the dangers with which it may be attended, have caused physicians to abandon the internal use of Euphorbium, which was formerly exhibited as a drastic purgative in dropsy, in icterus, and several other diseases. It is now employed only externally as a rubefacient, and even as a catheretic. In the north of Europe surgeons use it with success in caries of the bones and necrosis.

D. & M. of Adm. *Externally*, as catheretic. *Tinctura euphorbii*, Pr., R., Pol. (Euphorbium, 1; alcohol, 12.)

Oil of Horse Mint. *Oleum monardæ punctatæ* is a powerful rubefacient, producing heat, redness, pain, and even vesication when applied to the skin. Dr. Atlee, who first noticed it, states that he has used it with much advantage in chronic rheumatism, difficulty of hearing, periodical headache, paralytic affections, cholera infantum, and typhus. During the prevalence of an epidemic typhus in the city of Philadelphia he used it, with much benefit, in the remarkable sinking state and coldness of the extremities to which the patients were subject. The arms, breast, and legs were bathed with a liniment made with two ounces of spirit of camphor, and half an ounce of oil of horse mint, and in a few minutes a comfortable glow succeeded. The experiments of many other practitioners have entitled this oil to be ranked among the most active rubefacients we possess.

CHAPTER IV.

ASTRINGENT MEDICINES.

Astringents (*astringere*, to contract, to bind,) are medicines which, placed in contact with the living tissues, induce a kind of contraction of their fibres, at the same time that they exercise a tonic but transient action. It is in consequence of the former of these properties that substances of this nature, applied to a bleeding wound, produce a contraction of the tissues, which tends to stop hæmorrhage from the small vessels. When astringents are used externally for this purpose, they are called styptics.

The taste will generally indicate the substances endowed with the astringent property; the sensation of asperity which they leave on the tongue is well known to every body.

The vegetable and mineral kingdoms supply this kind of remedies. Those obtained from the former are commonly indebted for their activity to the presence of gallic acid and tannin, which, until lately, was considered as a proximate principle; but Chevreul believes it to be composed of gallic acid, a colouring principle, and several other substances. These bodies, which are scarcely soluble in cold, but very soluble in boiling water, decompose tartar emetic and the salts of iron, and form, with gelatine, an insoluble compound; they consequently are never to be combined with these substances in pharmaceutical preparations. Gallic acid is very soluble in alcohol; but tannin does not always dissolve entirely in this liquid.

The mineral astringents are acids, or salts with an excess of acid. Applied to the mucous membranes, or over denuded surfaces, they cause a painful impression, followed by numbness, whilst the parts contract and even become white by the diminution of the calibre of the capillaries. But in a short time the afflux of blood to the same parts increases gradually, and the vascular system seems to become more developed than before.

Whatever may be the nature of astringents, they all exercise a similar influence on the animal economy. They contract the tissues with which they come in contact, increase their tonic action, and begin by producing on them a local excitation; but if their action is too protracted, they weaken the sensibility of the parts, and have a tendency to augment their density.

If the action of these substances on the internal surfaces be too long continued, the secretion which occurs from the internal surface of the intestines is considerably diminished. They appear also to have a sympathetic influence on the cutaneous perspiration, which they lessen, and the cause of this is, their acting sometimes as diuretics. Some medicaments which are commonly used as astringents, may, when given in large doses, act upon the general economy in the same manner as tonics do, (see chapter V.); but they very often induce cardialgia, vomiting, and other unpleasant accidents. This prevents our exhibiting them in large doses.

From the preceding observations it must be evident to every one, that the astringent treatment must be injurious in all cases when an intense inflammation has taken place in an important organ; however, it is sometimes very successful at the beginning of an external inflammation, such as whitlow, burn, erysipelas produced by insolation; but it is principally when the phlegmasia has become chronic, when there is no longer any pain, and when the secretions have not yet reassumed their normal state, as in certain chronic diarrhœæ, and in the last period of catarrhal inflammations of the vagina or urethra, that astringents, properly exhibited, are most useful. They are likewise employed with success in colica pictonum; but in this case they must be administered in large doses.

The efficacy of these remedies has been highly extolled in passive hæmorrhage, such as menorrrhagia, hæmaturia, and others, and generally they are pretty successful; but in hæmoptysis, hæmatemesis and other similar affections, it will be prudent to abstain from using them, as these maladies are very often produced by organic wounds, which might be aggravated by any considerable excitation. Should it, however, be thought necessary to exhibit them in some instances, it will be proper to begin with those which are the least irritating; while in the first mentioned affections the most energetic may be used from the beginning without hesitation.

MINERAL ASTRINGENT SUBSTANCES.

Sulphuric Acid. *Acidum sulphuricum* Oil of vitriol—vitriolic acid. It exists in nature in great abundance, combined with certain salifiable bases, such as lime, alumen, soda, &c., and sometimes free and simply united to other substances, in the waters of some rivers and several caves near volcanoes.

P. P. This acid, such as is found in the shops, is liquid, colourless or brownish, of an oily consistence, inodorous, of a very acid taste, having a specific gravity of 1.842, and indicating 66° of Baumé's areometer. In this state it always contains some water, from which it is separated with much difficulty; it has, however, been obtained anhydrous, and in this state it is solid, white, opaque, melts at 25° Centig. (77° Fahr.), and crystallizes, in cooling on silky tufts.

C. P. Anhydrous or pure sulphuric acid is composed of sulphur 100, and oxygen 149.16; that of the shops contains in 100 parts, water 19, pure acid 81, and some small portions of sulphates of lead, of copper and alumina, &c. It reddens litmus very deeply, readily converts into charcoal, and reduces to a black jelly animal and vegetable substances. Exposed to the air, it attracts moisture, turns black, increases in *absolute* weight, whilst its specific gravity diminishes. It boils and volatilizes at about 25° Centig. (77° Fahr.); heated with charcoal, it is decomposed into oxygen and sulphurous acid; it congeals at —10° Centig. (+ 14° Fahr.), and crystallizes in hexaedral prisms; mixed with water, it produces at the time of the mixture, a considerable disengagement of caloric; finally, it possesses a great affinity for salifiable bases, and principally for baryta.

INCOMP. SUBST. All the carbonates, nitrates, hydro-chlorates, hydro-sulphates, &c.

PREP. Burn in a leaden chamber a mixture of eight parts of sulphur with one of nitre. The sulphur is converted into sulphurous acid by means of the oxygen of the air, and that of the nitric acid, which is transformed into nitrous acid. These two acids combine together and form a solid compound, which is decomposed by water and changed into sulphuric acid which is dissolved; and into nitrous gas, which is disengaged from it.

TH. E. Concentrated sulphuric acid is a very energetic caustic, and consequently a very violent poison; diluted with water it acts externally as a powerful astringent; taken internally, it increases the tone of the organs, stimulates the stomach, promotes the urinary secretion, whilst it diminishes the heat, quenches the thirst, and lessens the activity of circulation. This action renders it very similar to cooling medicines, without, however, permitting us to separate it from the class of astringents. If used for too long a time, it produces cardialgia, emaciation, and a very sensible change in the digestive functions.

It is administered with great success in the form of lemonade in bilious and typhoid fevers, in scurvy, chronic diarrhœa, dysenteries of long standing, and passive hæmorrhage.

D. & M. OF ADM. *Internally.* ♏.xij. to xxx. in sugar and water. *Acidum sulphuricum dilutum*, U. 3., L., D., DEN., R., F. (Sulphuric acid, 1 part; water, 7 parts.) *Tinctura acidi sulphurici*, U. S. (Sulphuric acid, f.℥iij.; alcohol, Oij.; ginger root and cinnamon, āā. ℥j.) *Acidum sulphuricum aromaticum*, E. (Alcohol, ℔ij.; sulphuric acid, ℥vj.; cinnamon and ginger root, āā. ℥j.) *Acidum sulphuricum alcoholisatum. Eau de Rabel*, P. *Mistura sulphurica acida*, POL. (Sulphuric acid, 1 part; alcohol, 3 parts.) *Liquor acidus Halleri*, A. (Alcohol and sulphuric acid, āā. equal parts.) *Tinctura aromatica cum acido sulphurico, Mynsicht's vitriolic elixir*, P. (Sulphuric acid, 13; aromatic ingredients, 20; sugar, 8; alcohol, 100.) ♏.xv. to xxx. *Tinctura aromatica sulphurica*, PR. (Aromatic tincture, 12; sulphuric acid, 1.) Same doses. *Mistura vulneraria acida*, PR., POL. (Sulphuric acid, 1; vinegar 6; alcohol, 3; honey, 2.) *Infusum rosæ comp.* U. S., L., D. (Dried roses, ℥ss.; boiling water, Oijss.; diluted sulphuric acid, f.ʒiij.; sugar, ℥jss.)—E. (Red rose, ℥j.; boiling water, ℔ijss.; diluted sulphuric acid, ʒss.; refined sugar, ℥j.) As a *gargle*, pure sulphuric acid, gutt. xv. to xx. in water, ℥viij. *Detersive gargle*, PARIS H. (Barley water, ℥vj.; honey of roses, ℥ij.; sulphuric acid, gutt. xx.)

Externally. Concentrated sulphuric acid as an escharotic to destroy warts. *Diluted*, as astringent, and an excitant of the skin, in psora and some other chronic affections of this tissue.

ALUM. *Alumen.* Super-sulphate of alumina and potassa, or of ammonia. It is found in small quantities in the neighbourhood of volcanoes.

P. P. Regular octahedral crystals, colourless, transparent, inodorous, of a sweetish, but very styptic taste, and of a specific gravity of 1.719.

C. P. Alum having for base potassa, is composed of sulphuric acid, 33.77; alumina, 10.82; potassa, 9.94; water, 45.47. It is slightly efflorescent; soluble in fifteen parts of cold water, and in a little less than its weight of boiling water; this solution reddens the tincture of litmus. Heated, it melts in its water of crystallization, and constitutes in this state *rock alum;* at a higher temperature, it swells up, becomes opaque and dry, and then is called *Calcined alum, Alumen ustum;* it decomposes at a red heat.

PREP. It is obtained by exposing the schistose clays, containing sulphuret of iron, to the action of the air and water for a year or more, and roasting the compound it forms; then by lixiviating the whole, and crystallizing the liquor. The potassa is furnished by the ashes of the wood employed in the process of roasting; but as there is not a sufficient quantity of them, and as the liquor contains even after the first crystallization, a good deal of super-sulphate of alumina, more potassa is added to it, and a second crop of crystals is obtained. Alum is freed from the small quantity of sulphate of iron it contains at first, by repeated crystallizations.

Incomp. Subst. Alkalies and their carbonates, lime, magnesia, ammonia, mercurial salts, acetate of lead, infusion of bark, nutgalls, and many other vegetable and animal substances.

Th. E. Alum is an energetic astringent; it often produces a painful sensation of the stomach, and in large doses, causes colics, nausea, and vomiting. It is administered with success in hæmorrhage of the uterus, and other hæmorrhages which are not attended with inflammation; in atonic discharges, such as blennorrhœa, leucorrhœa, certain serous diarrhœæ, and, in the *Hospital Saint Antoine*, it is exhibited in saturnine colic. Externally, it is employed in order to reduce certain chronic inflammations of the conjunctiva, of the fauces, and of the skin; some superficial ulcerations, such as aphthæ, prolapsus of the rectum, fluor albus, and finally, external hæmorrhages. Dr. Pommier, and after him, Dr. Bretonneau, have used it with success in cases of croup, or in inflammatory angina maligna; (diphtherite of Bretonneau,) it is blown into the posterior parts of the mouth.

Calcined alum is very much employed externally, as an escharotic, to stop the growth of fungous excrescences.

D. & M. of Adm. *Internally*. Gr. vj. to ʒj., in solution or pills. *Pulvis aluminis compositus*, E. (Sulphate of alum, 4 parts; kino, 1 part.) Dose, from gr.x. to xv. *Mistura aluminis*, Paris H. (Alum, ʒjss.; syrup, ℥j.; rose water, ℥iv.) Dose, a table spoonful. *Serum lactis aluminosum*, B. (ʒij.; milk, ℔j.) Dose, from ʒiv. to ℥ij. several times a day. *Astringent pills*, Paris H. (Alum, gr.vj.; extract of opium, gr.j.; catechu, ℈j.; for six pills.)

Externally. As gargle, injection, lotion, and collyrium, ʒss. to ʒij., dissolved in water, ℔j. *Liquor aluminis compositus*, L. (Alum and sulphate of zinc, āā. ℥ss.; boiling water, Oij.) *Astringent gargle*, Paris H. (Decoction of barley and of red roses, āā. ℥iij.; alum, ʒj.; honey of roses, ℥ij.) *Collyrium of alum*, Paris H. (Rose water, common water, āā. ℥ij.; alum, ℈j.)

Sulphate of Iron. *Ferri sulphas*, proto-sulphate of iron. Green vitriol, green copperas. It is found only in small quantities in its natural state.

P. P. Rhomboidal crystals, transparent, of a fine green colour, inodorous, of a styptic taste, similar to that of ink, and of a specific gravity of 1.880.

C. P. This salt is composed of sulphuric acid, 29.01; protoxide of iron, 25.43; water, 45.56. By exposure to the air, a yellowish pulverulent crust is produced on the surface, (subsulphate of peroxide.) It dissolves in two parts of cold, and in three-quarters of its weight of boiling water. This solution, by the action of the air, becomes turbid, and is converted from a green to a reddish yellow-colour; it undergoes the aqueous fusion at a moderate temperature, swells and whitens; it is decomposed at a higher temperature, and leaves a residue of red oxide of iron.

Prep. The sulphate of iron used in pharmacy is obtained by causing sulphuric acid, at 20°, to act upon metallic iron. The process for procuring this substance on a large scale does not permit us to get it sufficiently pure.

Incomp. Subst. All the salts the base of which forms with sulphuric acid an insoluble compound; the metallic oxides of the two first classes; borax, nitre, muriate of ammonia, the tartrate of potassa and soda, the acetate of lead, soaps, &c. Tannin and the other vegetable astringent principles are substances generally considered as not to be administered with this salt; but several modern authors are inclined to think that the precipitates formed by them are endowed with the same medicinal properties as the sulphate of iron.

Th. E. It is a very energetic astringent, and ought therefore, when employed internally, to be exhibited with the greatest caution; in fact, given in large doses, it may produce vomiting, violent colics, and other symptoms of a gastro-intestinal irritation; it is recommended in passive hemorrhages, principally such as are of a scorbutic nature; in diabetes and other atonic affections. According to Dr. Marc it is very useful in the treatment of intermittent fevers; finally, it has been discovered that it possesses some anthelmintic properties. Externally, it is employed in hemorrhages, in chronic mucous discharges, and in inveterate and bleeding ulcers.

D. & M. of Adm. *Internally. Pilulæ ferri sulphatis*, U. S. (Sulphate of iron, ʒj.; extract of gentian, a sufficient quantity;) for 30 pills.——*Pilulæ ferri sulphatis composita*, U. S. (Rhubarb, ʒjss.; sulphate of iron, ℈ij.; Castile soap, ʒss.;) for forty pills.—L. (Myrrh, ʒij.; sub-carbonate of soda, sulphate of iron, sugar, āā. ʒj.;) dose from gr.x. to ℈j.; two or three times a day.——*Pilulæ tonico-nervinæ*, Den. (Sulphate of iron, assafœtida, and extract of chamomile, āā. equal parts;) same doses.——*Mistura ferri comp. (Dr. Griffith's antihectic mixture,)* U. S. (Myrrh, ʒj.; sub-carbonate of potassa, gr. xxv.; rose water, Oss.; sulphate of iron, ℈j.; spirit of lavender, f.℥ss.; sugar, ʒj.)—L. Same proportions, except in that of rose water, which in the London preparation, is f.℥viiss.; another difference is the spirit of nutmeg in lieu of spirit of lavender. *Dr. Marc's mineral water.* (Sulphate of iron, ʒj.; water ℔ij.;) one glass in the apyrexia.

Externally, an aqueous solution used for lotions or injections.——*Emplastrum roborans*, B. (Litharge plaster, 24; resin, 6; wax and olive oil, āā. 3; sulphate of iron, 8.)

Oxide of Zinc. *Zinci oxidum.* Protoxide of zinc. Flowers of zinc. Pompholix. It is found in nature in large quantities, mixed with foreign substances.

P. P. White flakes, light, soft to the touch, inodorous, tasteless.

C. P. This oxide contains zinc 100, and oxygen 24.77. It is not altered by the air; it is insoluble in water and alcohol; completely soluble in caustic alkalies and in acids, with which it combines.

Prep. Heat in an open crucible, some metallic zinc, to about 370° Centig. (700° Fahr.); the zinc burns with a bright flame, and is converted into white flakes.

Th. E. This tonic and astringent substance, given in large doses, causes nausea, colic, vomiting, and even vertigo, and a sort of momentary inebriation. It has been highly commended in epilepsy, chorea, hysteria, and other neuroses. It is useful in atonic discharges of mucus. Externally, it has proved advantageous in chronic ophthalmia, obstinate leucorrhœa, chapped nipples, and albugo.

D. & M. of Adm. *Internally*, gr.vj, to ʒss, in pills. *Dr. Méglin's pills*, Paris H. (Oxide of zinc, extracts of valerian, of fumitory, of hyosciamus, āā. ʒj.; for 36 pills.) Dose from 2 to 4, several times a day.

Externally. *Unguentum zinci oxidi impuri*, U. S. (Axungia, 5 parts; oxide of zinc, 1 part,)——*Unguentum zinci*, L., E., F., Den. (Oxide of zinc, 1; simple liniment, cerate or axungia, 6.)—Pr., B. (Oxide of zinc, 1; cerate, 8.)—D. (Ointment of white wax, 32 parts; oxide of zinc, 3 parts.) *Dr. Dupuytren's dry collyrium*. (Sugar, ʒij.; red oxide of mercury, gr.x.; oxide of zinc, gr.xx.)

Sulphate of Zinc. *Zinci sulphas.* White vitrol. White copperas. It is found in water, but in an impure state, and in small quantities.

P. P. Four-sided prismatic crystals, white, inodorous, of an acrid taste, styptic, and acidulous; of the specific gravity of 1.912.

C. P. It is composed of sulphuric acid, 31.99; oxide of zinc, 32.12; water, 35.89; slightly efflorescent; soluble in two-and-a-half of cold, and in a little less than its weight of boiling water. Heated, it melts in its water of crystallization, and is decomposed at a high temperature.

Prep. Let some diluted sulphuric acid act upon granulated metallic zinc; filter the solution, and let it crystallize.

Incomp. Subst: Alkalies, hydro-sulphates, milk, and vegetable astringent infusions.

Th. E. Taken in considerable doses this salt acts like irritating poisons, and causes almost instantaneous vomiting; in small doses it is astringent and tonic. It is used as an emetic in some cases of poisoning, in order to evacuate the stomach quickly, but its action is very uncertain and cannot be relied upon. As a tonic and an astringent it succeeds in leucorrhœa, chronic catarrhal affections, and in certain cases of dyspepsia. It has been likewise recommended in epilepsy, hooping-cough, &c. *Externally*, it is employed in lotions and injections in ophthalmia, chronic blennorrhœa, scrofulous ulcerations, and in some superficial inflammations and ulcerations.

D. & M. of Adm. *Internally*. As an emetic, gr.x. to xx. As an astringent, from gr.ij. to vj. twice or thrice a day. *Dr. Paris's astringent pills*. (Sulphate of zinc, gr. x.; myrrh, ʒss.; conserve of roses, a sufficient quantity for 20 pills.) Dose, two a day.

Externally. *Collyrium*, from one to two grains to an ounce of liquid. *Injections* and *lotions* from ℈j. to ʒj. to water, ℔j.——*Collyrium of sulphate of zinc*, P. (Sulphate of zinc, 1; rose water, 250; alcohol, 8.)——*Astringent collyrium*, Paris H. (Sulphate of zinc, gr.xv.; rose water, ℥iv.)

Protoxide of Lead. *Plumbi oxidum fusum, seu Semivitreum Lythargyrum*. Semivitrified oxide of lead. Litharge. Not found in nature.

P. P. Crystalline scales, shining, opaque, yellow or reddish, without odour or smell.

C. P. This oxide is composed of lead, 100; oxygen, 7.7. Heated in contact with the air it passes to the state of deutoxide; it attracts the carbonic acid of the air, and is transformed, after a length of time, into a sub-carbonate. It is slightly soluble in water, very much so in alkalies and acids, with the latter of which it forms salts.

Prep. Heat metallic lead, exposed to the air, then let the protoxide thus produced cool slowly.

Th. E. It is only employed *externally*, under the form of plaster or ointment, as desiccative and maturative.

M. of Adm. *Emplastrum plumbi*, E., U. S. (Semivitrified oxide of lead, 1 part; olive oil, 2 parts; water, a sufficient quantity.—L. (Semivitreous oxide of lead, ℔v.; olive oil, Cj.; water, Oij.)—D. (Litharge, ℔v.; olive oil, ℔ix.; water, Oij.)——*Diapalme* or simple plaster, P. (Litharge, axungia, olive oil, equal parts of each.——*Onguent de la mère*, burnt plaster, P.——*Ceratum fuscum*, A. (Litharge, axungia, butter and mutton suet, āā. 25 parts; yellow wax, 18; black pitch, 8.)

This oxide used to enter into the composition of many other plasters which are now obsolete.

Deutoxide of Lead. *Plumbi oxidum rubrum, seu Minium*. Red oxide of lead; red lead. It is always the product of art.

P. P. Powder of a very bright orange-red colour, insipid, inodorous, and of a specific gravity of 8.94.

C. P. It is composed of lead, 100, and oxygen, 11.08. Heated, it melts and passes to the state of protoxide. It is insoluble in water, and combines with acids after losing some of its oxygen, and being reduced to the condition of litharge.

Prep. By calcining some protoxide of lead in open vessels.

Th. E. It is used to fulfil nearly the same indications as the preceding article. It is only employed externally in the form of plaster.

M. OF ADM. *Nuremberg plaster*, P. (Red oxide of lead, 90; olive oil and yellow wax, āā. 125; camphor, 6.)——*Minium troches*, P. (Red lead, 1; corrosive sublim. 2; crumb of bread, 8; rose water, q. s.) as escharotic.

NEUTRAL ACETATE OF LEAD. *Plumbi acetas*. Salt or sugar of lead. It does not exist in nature.

P. P. Irregular masses, white, somewhat resembling sugar, formed by the aggregation of small crystalline, four-sided prismatic needles, of a sweet, and soon after astringent taste, and of a specific gravity of 2.35.

C. P. This salt, composed of acetic acid, 26.99; oxide of lead, 58.71; water, 14.30; is a little efflorescent, and very soluble in water and alcohol. The watery solution is acid and limpid when it is made with distilled water, but it is turbid and white when pump or river water has been used. Heated in the air, it is decomposed, and disengages vapours of acetic acid.

INCOMP. SUBST. Alkalies and their carbonates; almost all acids and the neutral salts; lime, magnesia, hydro-sulphates, soaps, astringent vegetable infusions, and the greatest part of animal substances.

PREP. Boil some litharge in acetic acid.

TH. E. This salt, taken in large doses, acts like the irritating poisons; it produces sometimes the disease called lead colic; but it is seldom attended with accidents, and simply exerts a very energetic astringent action. It is employed internally with success in colliquative diarrhœa, maintained by superficial ulcerations of the mucous membrane of the intestines; in pulmonary, uterine, and intestinal hemorrhages; in chronic catarrhs, and principally in *colliquative* or profuse perspirations in persons affected with phthisis. It is frequently used externally as an astringent, and in ophthalmia whenever we desire to produce a resolution; in superficial inflammations of the skin, burns, contusions, &c.

D. & M. OF ADM. *Internally*. From half a grain to 2 grains, and more gradually, in pills, or dissolved in distilled water. Astringent pills, Dr. Paris, (Acetate of lead, gr.iij.; opium, gr.j.; extract of cicuta, gr.x. for four pills.) 2 a day.——*Acetate of lead pills*, PARIS H. (Acetate of lead, althæa root, āā. ℈j.; simple syrup, a sufficient quantity for 12 pills.) From 4 to 8 a day.

Externally. Lotions, injections, collyria, from ʒij. to ℥ij. to water, ℔j.——*Aqua saturnina*, R., DEN., F. (Acetate of lead, 1 part; distilled water, 24 parts; alcohol, 2 parts.)——*Ceratum plumbi acetatis*, L.——*Ceratum saturni*, DEN. (Acetate of lead, 1; white wax, 8; olive oil, 32.) *Resolvent collyrium*, PARIS H. (Infusion of elder flowers, ℥iv.; acetate of lead, gr. vj.; alcohol, ʒij.)

LIQUOR PLUMBI SUB-ACETATIS. *Plumbi sub-acetatis Liquidus*. L., U. S. Liquid sub-acetate of lead, extract of lead, Goulard's extract. It is prepared by boiling semivitrified oxide of lead, ℔ij. in acetic acid (distilled vinegar), Cj. down to six pints, assiduously stirring the mass; or, by the French process, which consists in boiling one part of pulverized litharge with a solution of three parts of acetate of lead in nine parts of distilled water, and by concentrating the liquor to 30° of Baumé's areometer. This last preparation is more uniform than the former. The liquid sub-acetate of lead turns the syrup of violets green, and forms a copious white precipitate with carbonic acid, or with common water. It is only employed externally as an astringent, and also whenever resolution is desirable in erysipelatous inflammations produced by external causes; in burns, contusions, sprains, &c.

M. OF ADM. *Liquor plumbi sub-acetatis dilutus*, L. (Extract of lead, f.ʒj.; distilled water, Oj.; proof spirit, f.ʒj.)——*Liquor sub-acetatis lithargyri compositus*, D. (Extract of lead, proof spirit, āā. f.ʒij.; distilled water, Oj.)——*Eau vegeto-minerale*, P. (Sub-acetate of lead, 1; distilled water, 64; alcohol, 4.) *Resolvent collyrium*, PARIS H. (Infusion of elder flowers, ℔j.; sub-acetate of lead, ʒj.) *Astringent gargle*, PARIS H. (Sub-acetate of lead, ʒss.; barley water, ℔j.; syrup, ℥j.)——*Ceratum plumbi compositum*, E. (Extract of lead, f.ʒijss.; yellow wax, ℥iv; olive oil. f.℥ix.; camphor, ʒss. *Opiated resolutive liniment*, PARIS H. (Sweet oil, ℥ij.; laudanum, ʒij.; sub-acetate of lead, ℥j.)

SUB-CARBONATE OF LEAD. *Plumbi sub-carbonas.* Cerusa. White lead. It is found in nature in small quantities.

P. P. In very white conic pieces, or in hard scales, of a grayish-white, insipid, inodorous, and of a specific gravity of 6.07.

C. P. This salt is composed of carbonic acid 100; oxide of lead 504.33; it is insoluble in water unless it contains carbonic acid; soluble in potassa, and reducible by heat.

PREP. Cause a current of carbonic acid gas to pass through a certain quantity of liquid of sub-acetate of lead.

TH. E. This substance, which is very much employed in the arts, is that which produces commonly the disease known by the name of *painters' colic*. As a remedy it is used only externally in a few cases. It is astringent and desiccative.

M. OF ADM. *Unguentum plumbi sub-carbonatis*, D., U. S. (Cerusa, or sub-carbonate of lead, ℥ij.; simple ointment, ℔j.)——*Unguentum carbonatis plumbi*, E. *Rhases's white ointment*, P. (Cerusa, 1; axungia or simple ointment, 5.)——*Unguentum cerusæ*, PR., POL., B. (Axungia and cerusa, āā. 2; suet, 1.)——*Emplastrum plumbi sub-carbonatis compositum*, U. S. (Sub-carbonate of lead, ℔j.; olive oil, 2 pints; yellow wax, ℥iv.; lead plaster, ℔jss.; orris root, ℥ix.; water, a sufficient quantity.)——*Emplastrum cerusæ*, PR., POL. (Cerusa, 9 parts; axungia, 6 parts.)

BORAX. *Sodæ sub-boras.* Sub-borate of soda. It is found in large quantities in several lakes in Thibet and China, and in some of the mines of Peru.

P. P. Irregular crystals, hexaedral, white, semitransparent, of a styptic and urinous taste, and of a specific gravity of 1.72.

C. P. According to M. Soubeiran, borax is composed of boric or boracic acid, 34.98; soda, 16.77; water, 48.25. It is slightly efflorescent, soluble in 8 parts of cold and 2 of boiling water. This solution turns the syrup of violets green. Heated, it melts in its water of crystallization, and a red heat transforms it into a transparent glass.

Prep. The borax of commerce is purified by melting it over the fire, then dissolving it while in powder, and permitting the liquor to crystallize.

Incomp. Subst. Acids generally, potassa, the sulphate and muriate of lime and magnesia, &c.

Th. E. It is used only externally as astringent and detersive in aphthæ, excessive salivation, attended with ulceration of the tongue and of the internal surface of the cheeks.

D. & M. of Adm. Gargles, ʒss. to ij. to ℔j. of liquid.——*Detersive gargle*, Paris, H. (Decoct. of barley, ℔jss.; syrup of gum arabic, ℥j.; borax, ʒij.) ——*Astringent gargle.* (Borax, ʒij.; rose water, ℥viij.; honey of roses, ℥i.)——*Mel boracis*, L. (Borax, 1; honey, 8.)

Lime. *Calx.* Protoxide of calcium. It is never found in nature but in combination with an acid, and particularly with the carbonic acid.

P. P. Irregular masses, of a grayish white, when the lime is anhydrous *(quick lime)*; powder or fragments very friable and pulverulent, very white when in the state of a hydrate *(slaked lime)*; of an acrid and caustic taste, and of a specific gravity of 2.3.

C. P. Lime is formed of calcium 100, and oxygen 30. Exposed to the air it attracts from it moisture and carbonic acid, falls into powder, and passes to the state of sub-carbonate. When water is poured on lime it rapidly combines with it, and is transformed into a hydrate; this action is attended with an elevation of temperature, with a considerable disengagement of aqueous vapours, and with a remarkable hissing. It is dissolved in about 400 parts of water, and turns the syrup of violets green.

Incomp. Subst. Acids, carbonates, the infusions of barks, rhubarb, colombo, &c.

Prep. The carbonate of lime is calcined in large furnaces or kilns.

Th. E. This caustic substance, introduced into the stomach, acts like the irritating poisons. Dissolved in water and exhibited in small doses it is endowed with powerful astringent and antacid properties. It is administered in diarrhœa, chronic leucorrhœa, some cases of dyspepsia, diabetes, and in verminous affections. It is employed as a lithontriptic in calculous affections of the bladder, and it is said that great advantage has been derived from its exhibition. Externally it is used in lotions and in injections in order to abate atonic and cancerous ulcers, certain diseases of the skin, itch, tinea capitis, and atonic mucous discharges.

D. & M. OF ADM. *Lime water*, P.——*Liquor seu aqua calcis*, L., E., D., U. S., PR., R., DAN., POL., B. (Distilled water saturated with lime.) ℥j. to viij. in ℔j. of milk or mucilaginous drink.

Externally. Calcareous soap, P. (Lime water and oil of sweet almonds, āā. 125; Sydenham's laudanum, 4.)——*Linimentum aquæ calcis*, E., D., U. S. (Lime water, olive or flaxseed oil, āā. equal parts.)——*Resolvent liniment*, PARIS H. (Sweet oil, ℥ij.; camphor, ʒij.; lime water, ℥ss.)——*Swediaur's alcoholic lotion*. (Lime water, 2 parts; alcohol, 1 part.)

VEGETABLE ASTRINGENT SUBSTANCES.

Family Leguminosæ.

CATECHU. *Catechu. Terra japonica.* Extract prepared from the wood, and the green fruits of the *Mimosa catechu*, Lin., and of several other trees of the same family, which grow in the East Indies, particularly in Bengal.

B. C. Leaves large, bipinnate, composed of 12 pairs of pinnate leaves, which are themselves formed of a great number of lanceolate and acute leaflets, two thorns slightly curved. Flowers in cylindrical spikes, from two to three in the axillæ of the leaves; fruits, plane, and elongated pods, containing five or six seeds.

P. P. There are three sorts of catechu. The first, *Bombay catechu*, is in square pieces, of a reddish-brown, friable, of a uniform texture, fracture uneven, of a specific gravity of about 1.39. The second, *Bengal catechu*, is in round pieces, of the weight of three or four ounces, of a deep chocolate colour internally, and resembling iron rust externally; more friable, of the specific gravity of 1.28. Finally, the third kind, *catechu in masses*, which is in irregular pieces of two or three ounces, of a reddish-brown, shining, homogeneous, and wrapped up in large-nerved leaves. These three kinds of catechu are inodorous, of an astringent taste at first, but soon after sweet and agreeable, at least the first and last sort.

C. P. The catechu of Bombay is composed of tannin, 109; extractive matter, 68; mucilage, 13; insoluble matter, lime, and impurities, 10. That of Bengal contains only 97 of tannin. Finally, the composition of the third is very analogous to that of the Bombay catechu. These three kinds are almost entirely soluble in water and alcohol.

INCOMP. SUBST. Alkalies, metallic salts, principally those of iron and gelatin.

C. P. It contains a large quantity of tannin, some gallic acid, and an extractive matter, all soluble in water[*].

INCOMP. SUBST. Alkaline carbonates, lime water, sulphates of iron and zinc, acetate of lead, corrosive sublimate, gelatin, infusion of yellow bark.

TH. E. It is one of the most energetic astringents, on account of the great quantity of tannin contained in its composition; consequently it must be administered internally with caution; for, when given in too large doses, or when too long continued, this substance irritates the stomach and produces cardialgia. It was highly recommended some years ago as a febrifuge; but it cannot be considered a succedaneum for Peruvian bark. It is used with success as an astringent, in certain dysenteries, in inveterate diarrhœa, passive hemorrhages, leucorrhœa, and other atonic mucous discharges. Externally, it is employed in lotions and gargles.

D. & M. OF ADM. *Internally.* Powdered oak bark, ʒiv. to ℥j.—Decoction, from ʒij. to ℥j. to water ℔ij.——*Decoctum quercus roboris*, E. (Oak bark, ℥j.; water, 0ijss.)—L. (Oak bark, ℥j.; water, 0ij.)

Externally. *Roborant fomentation*, PARIS H. (Oak bark and red roses, āā. ʒvj.; cinquefoil, ℥j.; water, ℔j.)——*Astringent injection.* (Decoction of oak bark, ℔jss.; alum, ʒiv.)

GALL-NUTS. *Gallæ turcicæ.* Excrescences growing on the leaves of the *Quercus infectoria*, Lin., a tree of Asia Minor; they are produced by the sting of an insect, called *Diplotepis gallæ tinctoriæ*, which deposits its eggs in it.

P. P. Galls are nearly round, of the size of a cherry, hard, heavy, studded with tuberosities, of a bluish brown colour, of a bitter and astringent taste; their texture is compact. Those which are white or reddish, light and hollow, are of an inferior quality.

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[*] Dr. C. Conwell and Mr. J. Scattergood have lately discovered in the bark of the *Quercus falcata*, of Michaux, and other species of oak, a crystalline substance which they have called *quercia*.

They obtain it by digesting bruised oak bark, first in ether, then in alcohol, and lastly in water. They afterwards boil it with water, acidulated with sulphuric acid, in the proportion of two drachms of acid to six ounces of water: upon filtering the liquor during ebullition, a large quantity of acicular crystals are thrown down. To these crystals, dissolved in water, add bicarbonate of soda in sufficient quantity to neutralize the acid, and quercia, in a state of purity, will be plentifully precipitated. Four hundred grains of oak bark, thus treated, yield seventy grains of *quercia*.

This substance is white, uncrystallizable, tasteless, and inodorous. It forms crystallizable salts with the mineral acids, and does not combine with the vegetable acids. Quercia, though not a metallic oxide, appears to have a stronger analogy to the earths than to the proximate vegetable alkalies. It is insoluble in ether, alcohol, and water, and destructible by heat. The neutral sulphate of quercia dissolves only in acidulated water, and is unalterable at the temperature of incandescence.—TR.

C. P. According to Sir H. Davy, gall-nuts contain tannin, 130; gallic acid, 31; mucilage, 12; and saline matters, 12, in 500 parts; the remainder is a lignous substance. Water and alcohol dissolve the active principles.

Incomp. Subst. The same as for oak bark.

Th. E. The astringent action of this substance is still more powerful than the preceding; given in too large doses it produces pains in the stomach and vomiting. It is used nearly in the same way as oak bark. It is employed in gargles with much success to obviate the effects of mercurial salivation; and in the form of ointment in piles.

D. & M. of Adm. *Internally.* Powder, gr.viij. to ℈j. Decoction and infusion, ʒj. to ij. to water, ℔ij.——*Tinctura gallarum*, E., D. (Galls, 1 part; alcohol, 8 parts,) dose ʒj. to ij.)——*Astringent gargle*, Paris H (Decoction of barley, claret wine, āā. ℥iv.; red roses, galls and pomegranate peel, āā. ʒj.; honey of roses, ℥ij.; sulphuric acid, as much as necessary to obtain an agreeable acidity.)

Externally. *Unguentum gallarum*, U. S. (Galls, 1 part; axungia, 7 parts.)—E. (Galls, 1 part; axungia, 8 parts.)—Paris H. (Galls and axungia, āā. equal parts.)

Family of Polygaleæ.

Ratanhy Root. *Radix ratanhiæ.* *Krameria triandria,* Ruiz, and *K. ixina;* shrubs growing, the former in Peru, in sandy and dry soils, and the latter in the West India Islands. Parts used, the bark of the root.

B. C. Root repent; stem ramose, hairy, whitish; leaves small, ovate, scariose; flowers in the axillæ of the superior leaves together with two bracteæ; calix, four deep divisions; corolla, irregular, four petals; three stamens, free and ascending; fruit globular, hirsute, containing two seeds deprived of endosperm.

P. P. Root woody, divided into numerous cylindrical ramifications of the size of the little finger, of a reddish brown, and of a savour extremely astringent, without the smallest taste of bitterness. The central part *(meditullium,)* is woody, hard, of a pale red, and tasteless.

C. P. According to M. Vogel this root contains modified tannin, 40; gum, 1.50; fecula, 0.50; wood, 48; gallic acid, a very small quantity. Water and alcohol dissolve the active principles of ratanhia, both which fluids are coloured red by them.

Incomp. Subst. The salts of iron, gelatin, mineral acids, &c.

Th. E. It is a very powerful astringent, and may be administered with great advantage nearly in all the same cases as catechu, such as passive hemorrhages, chronic diarrhœa, leucorrhœa, old blennorrhœa.

D. & M. of Adm. Decoction, ℥ss. to ℥j.; boiled in two pints of water, down to 1 pint.——*Tinctura ratanhiæ composita.* (Ratanhy root, ℥iij.; orange peel, ℥ij.;

serpentaria root, ℥ss.; saffron, ʒj.; rectified alcohol, Oij.) *Watery or alcoholic extract*, P. doses, ℈j. to ʒss. *Astringent mixture*, PARIS H. (Rose water, ℥iv.; extract of ratanhia root, ʒj.; diacode syrup, ℥j.) *Astringent tisan.* (Ratanhia root, ℥ss.; water, ℔ij.; boiled down to ℔j.; vinegar, ʒss.; syrup of quinces, as much as necessary.)

Family Rubiaceæ.

GUM KINO. *Gummi kino,* seu *gambiense.* Inspissated juice, extracted from the stem and branches of the *Nauclea gambir,* Hunter, a shrub growing in the Sunda Islands.

B. C. Leaves opposite; flowers axillary, infundibuliform.

P. P. Small masses, opaque, hard, brittle, of a very deep red; fracture shining, almost black; inodorous; taste excessively styptic, followed by a sweetish savour.

C. P. This substance contains a good deal of tannin and extractive matter; it is very little soluble in cold water; but warm water and alcohol dissolve a great part of it. The aqueous solution becomes turbid on cooling.

INCOMP. SUBST. Gelatin, sulphate of iron, the salts of silver and of lead.

TH. E. The action and administration of kino are almost the same as those of catechu and ratanhia; however, it is but seldom used on account of its high price.

D. & M. OF ADM. Powder, gr.x. to ʒss. Decoction, kino, ʒj. to ʒij.; to water, ℔ij.——*Pulvis kino compositus*, L. (Kino, ʒxv.; cinnamon, ʒiv.; opium, ʒj.) 20 grains of the powder contain 1 grain of opium. Dose, from gr.x. to ℈j.——*Astringent powder.* (Sulphate of copper, gr. x; kino, ʒi.; gum arabic, ʒij.) Dose, gr.x. to xv.——*Tinctura kino*, L., U. S. (Kino, ℥iij.; proof spirit, Oij.)—E. (Kino, ℥iij.; proof spirit, Ojss.)—D. (Kino, ℥ij.; proof spirit, Ojss.) Doses from 1 to 2 drachms. *Astringent mixture.* (Tincture of Kino, ʒiv.; infusion of red poppy flowers, ℥iv.; syrup of quinces, ℥ij.) Dose, two table-spoonfuls every four hours.

MADDER ROOT. *Radix Rubiæ tinctorum.* *Rubia tinctoria,* Lin. A perennial plant, cultivated in many parts of Europe. It is knotty, of the size of the little finger, reddish externally, yellowish internally, and of a bitter and acrid taste. It contains a red colouring matter, which renders it useful in the arts. It has the property of colouring red the bones and secretions of animals which are fed on this root for a length of time. It was once considered as slightly astringent and tonic, and was formerly administered in rachitis, dysentery, and mucous discharges; but its action is so weak that it is now entirely abandoned.

The same is the case with the *Asperula cynanchica,* Lin., which was used in gargles in the beginning of angina; and with the *Gallium verum*, Lin., which was given as a mild astringent and antispasmodic.

Family Meliaceæ.

The *Swietenia febrifuga*, Lin., a large tree growing in the mountainous parts of the East Indies, and resembling the *S. mahogany*, furnishes a reddish bark, brittle, compact, and covered with a gray and rough epidermis. According to Dr. Roxburgh this bark is employed in India as a substitute for bark, and he asserts that it contains a much larger proportion of active bitter and astringent principles, and is more antiseptic than bark. It seems, however, to be merely an astringent bitter, containing no cinchona. Dr. Roxburgh sent from India a quantity of this bark, which could not be distinguished from the kino of the shops. The *Swietenia mahogany*, a species of the same genus, possesses the same properties, and may be employed to answer similar indications.

Family Polygoneæ.

Bistort Root. ***Bistortæ radix. Polygonum bistorta***, Lin. Perennial plant indigenous to Europe, growing in elevated meadows.

P. U. The root.

B. C. Stem herbaceous, straight, one or two feet high; radical leaves cordiform, whitish underneath, the caulinary smaller, almost sessile, semi-amplexicaule; flowers rose colour, in an ovoid spike; fruit ovoid, triangular, smooth, with a single seed.

P. P. Root of the size of the little finger, twisted in a spiral line, and presenting at every curve a kind of articulation; brown externally, reddish internally, inodorous, and of a very striking astringent taste.

C. P. It contains a good deal of tannin, some gallic acid, starch, and oxalic acid. Water and alcohol dissolve its active principles.

Incomp. Subst. Sulphate of iron, gelatin, &c.

Th. E. It is one of the best astringents, indigenous to Europe, that the materia medica contains. It is exhibited with success in chronic discharges, in passive hemorrhage of the lungs and bowels, atonic diarrhœa, &c. Combined with gentian root, or other bitter substances, bistort is recommended in intermittent fevers.

D. & M. of Adm. Powder, ʒss. to j. Decoction, ℥j. to ij. to ℔ij. of water.—— *Pulvis detribus*, Paris H. (Gentian, ʒss.; bistort and pœonia roots, āā. ℥ij.——

Anti-febrile powder, (Bistort and calamus aromaticus, āā. ʒiij.; ginger, ʒj.; hydrochlor. of ammonia, ℈iv.) for 8 doses.——*Stomachic mixture*, Paris H. (Bistort, ʒj.; elder rob, ʒiij.; simple syrup, ℥j.; water, ℥iv.)——*Astringent enema*, Paris H. (Bistort, ℥j.; poppy heads, ℥ss.; water, ℔ij.)——*Astringent fomentation*, Paris H. (Bistort and pomegranate bark, āā. ℥ij.; red wine, ℔j.; hydro-chlor. of ammon, ʒij.)

Family Geraniaceæ.

Spotted Crane Bill. *Geranium maculatum*, Lin. A North American perennial plant, growing in shady woods and meadows from Canada to Carolina. P. U. The root.

B. C. Stem erect, terete, hairy, becoming forked at the height of 6 to 10 inches, and garnished at this point of division with a pair of large leaves, supported on petioles less than one-half of the length of those of the radical leaves; the superior leaves are generally much the largest. Flowers germinate on peduncles arising from the dichotomous division of the stem. Petals 5, obovate, entire, rose-coloured with purple veins, stamina 10, with glands at the base. Germ egg-shaped; style the length of the stamens at first, but becoming afterwards elongated and persistent. Five stigmas; fruit, capsule containing 5 seeds.

P. P. Root thick, rough, knobby, of a dark brown colour externally; of a pale flesh colour internally; taste astringent without being bitter; inodorous.

C. P. According to the analysis furnished by Dr. E. Staples, this plant contains gallic acid, tannin, mucilage, starch, red colouring matter, and probably a crystallizable vegetable substance.

Th. E. Boiled in milk it proves an efficacious medicine in cholera infantum and diarrhœa. A decoction of the root is very useful in aphthous affections of the mouth and throat. The native Indians consider it a valuable remedy in syphilis. The infusion has been used with success, as an injection, in gonorrhœa and gleet, and has succeeded in stopping hemorrhages, on the pulverized root being applied to the bleeding orifice. Dr. Thacher observes, that he has known the infusion of this substance to restrain hemorrhage from the lungs in a very prompt manner.

D. & M. of Adm. Powder from 15 to 25 and even 35 grains. *Extract* from 12 to 15 grains. *Tincture*, (Geranium root, 2; alcohol, 16;) from ʒij. to iv. Decoction, ℥j. to ℥ss. boiled in half a pint of water; 1 or 2 table spoonfuls may be given at once.

Family Saxifrageæ.

American Sanicle. Alum Root. *Heuchera Americana*, Lin. *H. Viscida*, Pursh. A perennial plant, native of N. America, growing in fissures of rocks, &c. P. U. The root.

B. C. Stemless; scapes numerous from a single root, naked, terete, smooth under ground; and just where they emerge from it, of a bright carmine colour;

higher up they become very hairy and of a green colour, frequently attaining the height of two or three feet. Leaves all radical, cordate, five or seven-lobed, lobes rounded and toothed. Flowers small, on a long, loose, pyramidal panicle or thyrsus; calix five-parted; petals minute, rose-coloured; filaments yellow; anthers small, red and globular. Germ bifurcate at the summit. Capsule consisting of two long beaks, containing numerous small seeds. The whole plant covered with a viscid pubescence.

P. P. Root irregular, knotty, slightly compressed, of a yellowish colour, and intensely astringent.

Th. E. This root is a powerful astringent styptic. It is one of the articles of the materia medica of the American Indians, who use the pulverized root to powder wounds, ulcers, and cancers. It is the base of a powder which has lately acquired some reputation in the cure of cancers.

Family Plumbagineæ.

Marsh Rosemary. Sea Lavender. *Statice Caroliniana*, Walt. A maritime plant, native of N. America, very nearly related to the *Statice limonium* of Europe, and growing in salt marshes. P. U. The roots.

B. C. Scapes alternately and numerously branched, about one foot high. Leaves narrow, obovate, lanceolate, mucronate below the apex, entire and veinless. Ramuli corymbose. Flowers in ramose, divaricate panicles of a blue colour; calix monophyllous, tubular, five angled, the angles ciliate, and ending in long acute teeth, with sometimes minute intermediate teeth; corolla hypocrateriform, five-sided. Capsule unilocular, with one seed.

P. P. The root is one of the most powerful astringents in the vegetable materia medica. It communicates to the mouth a highly austere and astringent taste, combined with a good deal of bitterness. It contains evidently a very large quantity of tannin and gallic acid.

Th. E. The Statice caroliniana, is very much used in decoction, as a topical remedy in ulcerated affections of the mouth and throat, and from its astringent and antiseptic quality, great advantage generally follows its exhibition. Dr. Baylies administered the decoction both internally and externally in cynanche maligna, and it proved very beneficial; other physicians have exhibited it also in the same dangerous complaint, with equal success. Dr. Mott asserts, that in chronic stages of dysentery, after the inflammatory diathesis, tenesmus, &c., have been removed, a strong decoction of the root has restored patients to health, after various tonics and astringents had been used to no purpose.

Family Myrtaceæ.

Pomegranate. ***Punica granatum*****,** Lin. A shrub originally from the north of Africa, now cultivated in the south of Europe. P. U. The unexpanded flowers, *Balaustii*, Balaustine; the rind of the fruit, *Malicorium*; and the bark of the root, *cortex radicis punicæ.*

B. C. Trunk irregular, furnished with small thorns; leaves elliptic, shining; flowers terminal, of a bright red colour; calix coloured, campanulate; corolla, five petals; ovary inferior, with many cells; fruit globular, dry, scariose, of a reddish-yellow, containing numerous fleshy seeds.

P. P. The desiccated flowers are red. The rind of the fruit is in dry fragments, hard, rough, reddish externally, yellow within; the bark of the root is in small fragments of a yellowish-gray externally, and yellow internally. These substances are inodorous and of a very astringent taste, without bitterness.

C. P. The flowers and the *Malicorium* contain a large quantity of tannin and gallic acid. The bark of the root is composed, according to Mitouart, of a pretty abundant quantity of fatty matter, tannin, gallic acid, a resinous matter, mannite, sugar, and lignous fibres.

Incomp. Subst. The same as the preceding articles.

Th. E. All the parts of the pomegranate tree are endowed with very energetic astringent properties; the flowers and the *Malicorium* are used in the same cases as catechu, bistort, &c. The bark of the root, besides its astringent properties, seems to exercise upon the intestinal canal, and even on tænia, a particular action, which induces the expulsion of this worm. This, however, may be owing to its uncommon astringent power. The numerous cases of cures of this kind, even of a serious character, recently collected in France and elsewhere, no longer admit of any doubt of the efficacy of this substance as an anthelmintic. Its administration must be attended to with great precaution; for, if given in too large doses, it produces vomiting, colics, and pains in the stomach; it appears, likewise, to act upon the nervous system, as is evinced by the dizziness, the state of intoxication and stupor, which it sometimes produces.

D. & M. of Adm. *Flowers.* Infusion, ℥ss. to ℥j. to ℔ij. of water.—*Malicorium.* Pulverized, ʒss. to ʒj.—*Infusion*, ʒij. to ʒiv. to ℔ij. of water.—Pulverized bark of the root, gr.xij. to ʒss. Decoction, ℥ij. to ℔ij. of water, reduced to j.; this quantity is taken in three doses, at intervals of half an hour.

The leaves and bark of the **Common Myrtle**, *Myrtus communis*, Lin., were once used in atonic and mucous discharges.

This shrub, belonging to the same family as the preceding, grows spontaneously in the south of France; but it is no longer in use.

Family Rosaceæ.

Red Rose. *Rosæ rubæ flores. Rosa gallica*, Lin. A shrub growing in the south of France, and cultivated in England. P. U. Petals of the unexpanded flowers.

B. C. Stems straight, ramose, furnished with numerous reddish prickles; leaves alternate, petiolate, composed of from three to seven oval and sessile folioles; flowers, of a fine crimson red; calix urceolate, persistent, globular; fruit, contained in the tube of the calix.

P. P. Petals of a deep red colour, of a faint, but pleasant smell; of a bitter and styptic taste.

C. P. According to Cartier, they contain tannin, gallic acid, a colouring matter, an essential oil, a fatty matter, albumen, some soluble salts with base of potassa, insoluble salts with base of lime, some silica and oxide of iron. Water, alcohol, and vinegar dissolve their active principles.

Incomp. Subst. Sulphates of iron, of zinc; gelatin, lime water, &c.

Th. E. The red rose is astringent, tonic, and is exhibited with advantage in passive hæmorrhages, mucous discharges, colliquative diarrhœa, and other similar affections.

D. & M. of Adm. Infusion, one or two pinches to a pint of boiling water.——*Infusum rosæ compositum*, L., D., U. S. (Red roses, ʒiv.; boiling water, Oijss.; diluted sulphuric acid, f.ʒiij.; sugar, ℥jss.)——*Infusum rosæ gallicæ*, E. (Red roses, ℥j.; boiling water, ℔ijss.; diluted sulphuric acid, ℥ss.; sugar, ℥j.)——*Syrupus rosæ gallicæ*, E. (Red roses, 1 part; boiling water, 9 parts; sugar, 10 parts.) *Honey of roses*, L., D. (Red roses, ℥iv.; boiling water, Oiij.; honey, ℔v.)——*Confectio rosæ gallicæ*, L., E., D., U. S. (Red roses, 1 part; white sugar, 3 parts.) Dose from one to two drachms; this preparation is frequently used as excipient of active remedies. *Vinegar of roses*, P., Den. (Red roses, 1; vinegar 16.)——*Tinctura rosarum acidulata*, Pr. (Red roses, 3; diluted sulphuric acid, 1; water, 24.) ʒss. to j. *Honey of roses*, P. (Red roses, 1; boiling water, 4; purified honey, 6.)——*Mel rosarum*, Pr., Pol., F., A., R. (Red roses, 1; honey, 12; water, 6.) ℥j. to ℥ij., in enema, gargles, lotions.

The ripe fruit of the Sweet Briar, *Rosa canina*. Lin., called in French *Cynorrhodon*, possesses an acid and astringent taste, and seems to contain some free citric acid. It is used to prepare the conserve of cynorrhodon, P. *Confectio rosæ caninæ*, L., which is sometimes administered as a slight astringent in chronic diarrhœa, &c. in the dose of from ʒij. to ℥j.

Tormentil Root. *Tormentillæ radix. Tormentilla erecta*, Lin., a perennial plant, indigenous to Europe, growing in fields and woods, principally in the Alps and Pyrenees. P. U. The root.

B. C. Stem herbaceous, scattered; leaves pinnate, three to five leaflets; flowers yellow, small, axillary, single; calix, eight divisions; corolla, four petals; fruit globular, naked, attached to a dry receptacle.

P. P. Root irregular, knotty, thick, tubercular, of a brown colour externally, reddish within, of a slightly aromatic smell, of a very astringent and somewhat bitter taste.

C. P. It contains a great proportion of tannin, soluble in boiling water and alcohol.

INCOMP. SUBST. The same as with bistort, catechu, &c.

TH. E. This substance is very astringent, and is exhibited in most of the cases in which catechu is employed, but it is now very little used.

BENET OF AVENS. *Cariophyllatæ radix*. *Geum urbanum*, Lin. Perrennial plant, indigenous to Europe, growing in woods and shady places. P. U. The root.

B. C. Stem herbaceous, straight, villose; radical leaves composed of nine leaflets deeply dentate; the caulinary almost sessile, composed of three leaflets, accompanied with two stipules; flowers small, yellow, terminal; calix spreading, with five deep divisions; thirty stamens; fruit surmounted by a point forming a hook at its extremity.

P. P. Root of the size of a quill, from which starts numerous fibres; brown externally, of a pale red internally; of a smell nearly similar to cloves, when it is fresh; and of an astringent, aromatic, and slightly bitter taste.

C. P. According to Tromsdorff, it contains, tannin, 410; resin, 40; volatile oil, 0.39; adragantin, 92; gummous matter, 158; and lignous fibres, 300. Water and alcohol dissolve its active parts.

INCOMP. SUBST. The salts of iron, gelatin, &c.

TH. E. Benet possesses astringent and tonic properties, for which it is employed with success in the last stage of dysentery, in chronic diarrhœa, chronic catarrhs, passive uterine hemorrhage, and in intermittent fevers.

D. & M. OF ADM. Powder, ℈j. to ʒj. Decoct. ℥j. to ℔ij. of water, reduced to one-third. *Tincture.* (Benet, 1; alcohol, 16.) ʒij. to ℥ss.

Family Therebintaceæ.

The NARROW-LEAVED SUMACH, *Rhus copallinum*, Willd.; the PENNSYLVANIA SUMACH, *R. glabrum*, Willd., and the VIRGINIAN SUMACH, *R. typhinum*, Willd., are all native plants of North America, possessing considerable astringent properties.

They are frequently exhibited as a gargle in sore throats, and for cleansing the mouth in putrid fevers.

The following plants are natives of Europe, and possess astringent properties, but are not important enough or sufficiently known and employed to deserve our entering into any very minute details about them in a work of this nature. We shall, however, give their names in full:—

SILVER-WEED,	*Potentilla Anserina.*
CINQUEFOIL,	*Potentilla reptans.*
WILD STRAWBERRY,	*Fragaria vesca.*
AGRIMONY,	*Agrimonia eupatoria.*
LADIES' MANTLE,	*Alchemilla vulgaris.*
MEADOW SWEET,	*Spirea ulmaria.*
SUMACHA,	*Rhus coriaria.*
COMMON CYPRESS,	*Cupressus sempervirens.*
TAMARISK TREE,	*Tamarix gallica.*
LARGE AND SMALL PERIWINKLE,	*Vinca major and minor.*
STINKING CRANE-BILL,	*Geranium robertianum.*
BLOODY CRANE-BILL,	*Geranium sanguineum.*
EYE BRIGHT,	*Euphrasia officinalis.*
BROAD-LEAVED PLANTAIN,	*Plantago major.*

CHAPTER V.

TONIC SUBSTANCES.

Tonics (τονοω, I strengthen,) are remedies, the general action of which on the economy has a tendency to increase the energy of the organs. No very distinctive mark exists between these remedies and astringents; but in larger doses they exercise on most of the vital functions a direct influence, independent of their local action. In this last case the contractions of the heart become more energetic, without, however, increasing in frequency; and the pulse, at the same time that it acquires strength, becomes harder, closer in its beat, and fuller. Nevertheless, the colour of the skin does not brighten, and the animal heat does not increase, unless the tonic remedies be exhibited for a long time; but then these phenomena, as well as the acceleration of the circulation which accompanies them, are only secondary effects produced by the increase of nutrition, and not by the direct influence of the tonics on the nervous system. These remedies promote nutrition, not only by their action on the whole economy, but also by the modifications which they impart to the digestive organs. They render digestion more rapid and more perfect, and the fecal matters more consistent; they diminish the quantity of the latter, and even produce constipation.

The action of tonics on the secretory organs is likewise very evident. They have always a tendency to strengthen these organs, and to augment their energy; nevertheless, directly opposite effects may result from this action. Thus, when a superabundance of the products of secretion is caused by the weakness of the organ, these remedies have evidently a tendency to diminish them by restoring the secretory tissue to the normal state; when, on the contrary, secretions are lessened by the torpor of the organs, they are again re-established under the influence of tonics; they therefore often act as diuretics, diaphoretics, emmenagogues, expectorants, &c.

Tonic remedies are generally derived from the vegetable and mineral kingdoms. The vegetable tonics are remarkable for the bitter principles they contain, to which they owe, in a great measure, their therapeutical properties. In most of them this bitter principle presents all the characters of alkalinity; such are quinia, cinchonia, &c. Formerly, these different bitter principles were confounded under the name of *extractives;* but we know at present that the extractive is a product, the composition of which varies according to the nature of the plant which furnishes it. However, in the analysis of many vegetables we still designate by this name a bitter substance containing nitrogen, and soluble in water and alcohol. Besides these bitter principles, tonic remedies often contain tanning substances, gallic acid, &c.; this circumstance shews a strong analogy between the proximate principles of tonics and those of astringents; but, in general, the proportion of these substances is small, and we must not ascribe to them the direct action of tonics on the animal economy. The tonics furnished by the mineral kingdom are still more similar to astringents; and there is no chemical test by which they may be distinguished. As to tonic animal substances, hardly any other, except ox-gall, have been as yet exhibited.

We take advantage of the strengthening influence which tonics exercise upon the whole economy, to restore the general strength, and the energy of the organs in many affections. It is principally in the treatment of intermittent fevers and certain periodical affections, such as neuralgia, that the employment of remedies of this description is adopted. Their effects, in these cases, are so peculiar, that several of these remedies have, for a long time, been considered as specifics, and designated under the names of *febrifuge* and *anti-periodical.* Are we to attribute these happy results to their tonic action? We are inclined to believe this to be the case, for, administered during the apyrexia, they prevent the return of the disease, by imparting to the whole system unusual energy and activity; whilst, when given during the paroxysm, they augment the intensity of the symptoms, and become injurious for the same reasons that they have been useful in the former stage.

The administration of tonics is likewise indicated in essentially tonic diseases, such as adynamic fevers, gangrenous, scorbutic, and scrofulous affections. They are used with the same success in almost all chronic inflammations, when there no longer exists either fever or pain; in cases of weakness of the digestive organs, &c.

It is evident from what we have just stated, that we must abstain from exhibiting these remedies whenever the digestive canal, or any other important organ, is in a more or less active inflammatory state.

Tonics are employed externally in many cases, and especially in atonic or gangrenous ulcers. Their action, in these circumstances, is very similar to that of astringents.

TONIC MINERAL SUBSTANCES.

Iron Filings. *Ferri scobs seu limatura.* This metal, the most abundantly spread in nature, is met with under a variety of forms almost all over the globe.

P. P. It is solid, of a bluish-gray colour, very ductile, tenacious, hard, of a granular texture, is attracted by the magnet, and susceptible of becoming itself a magnet; of a slightly styptic taste, of a peculiar smell, which is developed by friction, and of the specific gravity of 7.788.

C. P. Exposed to the moisture of the air, it absorbs oxygen and carbonic acid, and is transformed into oxide and sub-carbonate of iron; it burns rapidly at a high temperature, and passes to the state of oxide; it is decomposed by water, and melts at 130° of Wedgwood's pyrometer.

P. P. Iron filings proceeding from pin factories are preferable, because they do not contain any copper like those of the other manufactories; they may, however, be freed from this metal by means of a magnetized bar. Thus purified, iron is porphyrized.

Th. E. Iron and its different preparations are endowed with a very manifest tonic action, which affects the animal economy but slowly. It is on the digestive canal that the tonic influence of these remedies is at first exercised; they increase, in a slow and almost insensible manner, the digestive powers; excite appetite, and assist powerfully the stomach in elaborating the alimentary substances. By means of the constriction which they induce, they repress the quantity of intestinal secretions, even so as to produce constipation; finally, they blacken the fecal matter; which circumstance induces the presumption, that the different preparations of iron are reduced into the state of deutoxide by the action of the digestive organs. In consequence of this local action, the particles of iron absorbed and carried into the blood, as Messrs, Tiedemann and Gmelin's observations prove, soon manifest their influence on the circulation and even on the blood itself; it is, moreover, this influence which more especially characterizes their medication. It is, however, extended to the whole economy. After the use of iron for some time, the pulse becomes more developed, stronger and more frequent; and these effects are produced by the augmentation of the activity of the heart; the colour of the face becomes more florid, the blood itself seems more vivid, and the muscular motions, together with all the functions, seem to be performed with more energy and regularity. These phenomena are particularly observable in weak persons, of a relaxed and lymphatic temperament, whose circulation is slow, face pale, and whose vital actions possess little energy. If the employment of these martial preparations be continued too long, or if they be administered in doses too large, or to individuals of a robust, plethoric and sanguine temperament, we soon discover that they produce, at first, pains in the stomach, nidorous eructations, colics, afterwards cephalalgia, with congestion of blood in the head, active hæmorrhage, and especially epistaxis, menorrhagia, &c.; and, in general, all those affections attendant on plethora.

From these considerations, we may infer that iron and all its various preparations, must be very useful in all affections characterized by general weakness and torpor of the organs; and this is proved in a positive manner by experience. They are administered with success in chlorosis, in amenorrhœa caused by a general asthenic state; in some cases of chronic engorgements of the abdominal viscera, which often occur after intermittent fevers; in scrofulous affections, mucous discharges caused by atony of the membranes, in some cases of diabetes, convalescence from violent diseases, in order to promote the digestive powers, and, finally, in all atonic affections which are accompanied by paleness and an œdematous state of the skin, and in other indications of general atony. These remedies will, on the contrary, aggravate the disease in all cases attended with plethora, or in acute inflammatory affections.

Metallic iron is employed in preference to any of its preparations in dyspepsia, hysteria, chlorosis, especially when these affections are accompanied with acidity of the *primæ viæ*.

D. & M. OF ADM. Gr.v. to ʒss. gradually, in pills, or united with some bitter extract. *Iron lozenges*, P. (Iron filings, 4; cinnamon, 1; sugar, 40; mucilage of gum tragacanth, a sufficient quantity.)—PARIS H. (Iron filings, chocolate, āā. 4; saffron, 1; mucilage, a sufficient quantity, for 12 grain lozenges.) Dose, 3 or 4 a day.——*Vinum ferri*, D., U. S. (Iron wire cut in pieces, ℥iv.; Rhenish wine, Oiv.—L. (Iron filings, ℥i.; super-tartrate of potassa, ʒvj.; distilled water, Oij.; proof spirit, f.℥xx.)——*Chalybeate wine*, P. (Iron filings, 1; white wine, 32.)——*Vinum martianum*, PR., F. (Iron filings, 2; cinnamon, 1; Rhenish wine, 24.) From 2 drachms to half an ounce 2 or 3 times a day.——*Anti-chlorotic powder*, PARIS H. (Iron filings, ℈j.; Peruvian bark, ʒj.; cinnamon, ʒss.; for 12 doses.) *Stoll's tonic pills*. (Iron filings, gum ammoniac, extract of small centaury, āā. ʒj.; syrup of fumitory, a sufficient quantity, for 6 grain pills.) Three pills a day.——*Sydenham's martial pills*. (Iron filings, ʒij.; cinnamon, gr.xviij.; extract of wormwood, a sufficient quantity, for 4 grain pills.) Nine a day.

BLACK OXIDE OF IRON. *Ferri oxidum nigrum*. *Æthiops martialis*. *Magnetic oxide of iron*. Mixture of deutoxide and protoxide of hydrate of iron. It is found abundantly in nature, principally in Sweden; and the *loadstone* is one of its varieties.

P. P. A black powder, more or less intense in colour, staining paper, inodorous, of a ferruginous taste, attracted by the magnet, and of the specific gravity of 5.107.

C. P. It consists, according to Berzelius, of iron 100, and oxygen 39.31, and, according to Thénard, it is composed of protoxide and deutoxide of iron. It is insoluble in water; but it dissolves in acids without effervescence.

Prep. Expose purified and carefully washed filings of iron to the protracted action of water; stir the mass every now and then, at a temperature of from 20° to 25° Centig. (68° to 70° Fahr.)

Th. E. See page 86.

D. & M. of Adm. Gr.v. to ℈j, in powder or pills.——*Emmenagogue pills*, Paris H. (Black oxide of iron, gr.j.; saffron and valerian root, āā. gr.ij.; syrup of mugwort, q. s. for 1 pill.) From 4 to 8 a day.

Peroxide of Iron. *Oxidum ferri rubrum.* Red oxide of iron. Colcothar, &c. This substance exists in great quantity in nature, under the name of *hematite* or *blood-stone*, oligist iron, &c.; but it is generally very impure.

P. P. Friable masses of a violet-red, or a powder of a lively red colour, staining the fingers, inodorous, insipid, not attracted by the loadstone.

C. P. This oxide contains iron 100, oxygen 44.22. It attracts the carbonic acid of the air and is converted into a carbonate; it is insoluble in water, but soluble in several acids.

Prep. It is obtained by decomposition, by heat, in a crucible of the proto-sulphate of iron; the residue is pulverized, and washed until it contains no more sulphuric acid.

Th. E. See page 86.

D. & M. of Adm. The same as those of the preceding article.

Sub-carbonate of Iron. *Ferri sub-carbonas.* Brown oxide of iron. Rust of iron.

P. P. Powder of a reddish-brown, inodorous, of a slightly styptic taste.

C. P. The composition of this substance varies according to the mode of preparation employed to obtain it; it contains, generally, more or less of the protoxide and deutoxide of iron; it is insoluble in water, and very little soluble in an excess of carbonic acid. Acids dissolve it with effervescence.

Prep. Submit iron filings to the action of the humidity of the air, or decompose the sulphate of iron by an alkaline subcarbonate.

Th. E. Amongst the ferruginous preparations, the rust is the most commonly used. It possesses the same properties, and is administered under the same circumstances, as metallic iron; it is, moreover, employed with much success in England, as an anti-periodic, in *tic douloureux* of the face, and several other intermittent neuralgiæ. We have administered it in several cases of this nature, and have obtained, if not a complete cessation, at least a considerable diminution, of the pain.

D. & M. of Adm. As a tonic, gr.xv. to ʒj.; and as an anti-periodic, ʒj. to iij a day, in three doses.——*Tonic bolus*, Dr. Paris. (Sub-carbonate of iron, gr.x.; valerian, ʒss.; ginger syrup, q. s.)——*Eau rouillé*, (aerated water, in which pieces of rusted iron are immersed.) See ferruginous mineral waters, p. 91.

Tartrate of Potassa and Iron. *Potassa et ferri tartras.* Martial tartar or soluble chalybs. This salt is always an artificial product.

P. P. Small, greenish needles, or brown powder, somewhat greenish, inodorous, of a styptic taste.

C. P. As is indicated by its name, it is a salt with a double base, very often mixed with metallic iron or the oxide of this metal. It is very deliquescent, and consequently very soluble in water.

Prep. Boil in seven parts of water, two parts of iron filings, and five of super-tartrate of potassa, until the liquor is no longer acid; filter and evaporate the solution.

Incomp. Subst. Powerful acids, lime-water, hydro-sulphuric acid, hydro-sulphates, and astringent vegetable infusions.

Th. E. The tartrate of iron possesses the same properties as the other martial preparations (see page 91), except that its action is less energetic; therefore it is administered to children in those cases in which the exhibition of ferruginous preparations is required. It is likewise used externally as an astringent and resolvent in constusions, sprains, &c.

D. & M. of Adm. *Internally*, gr.xij. to ℈j.; and even ʒss. in a solution, or in pills with a bitter extract.——*Tartarized tincture of Mars*, P. (Concentrated solution of tartrate of potassa and iron at 30° of Baumé's areometer, about 400; alcohol, 40.) Dose, gutt. xx. to xl.——*Astringent pills*, Dr. Paris. (Tartrate of potassa and iron, gr.x.; columbo, gr.xv.;) three or four a day.

Externally. *Boules de Nancy*, P. *Globuli martiales*, A., Den., Pr. (Iron filings, 1; red tartar, 2; alcohol, q. s.;) dissolved in water, they form the *Eau de boule*.

Proto-chloride of Iron. *Ferri murias sublīmatus.* This salt is always the product of art.

P. P. Crystalline scales, very small, whitish or brown, inodorous, and of a styptic taste.

purgative properties, and they contain but a very small proportion of iron.

The action of these waters on the animal economy is nearly the same as that of all the martial preparations; they are often administered with success in the affections in which the employment of ferruginous substances is indicated. It is principally in chronic affections of the abdominal viscera, in chlorosis, in atonic and obstinate mucous discharges, &c., that they are exhibited most successfully. They are commonly administered in various doses, which we shall mention under their respective heads. We shall name some of the most important and best known of the tonic mineral waters of England, France, Germany, the United States, &c.

BRIGHTON. This chalybeate water contains, in 58,309 grains; carbonic acid, 18.0; sulphate of lime, 32.7; sulphate of iron, 11.2; muriate of soda, 12.2; muriate of magnesia, 6.0; silica, 1.2. Sp. gr. 1.00108.

TUNBRIDGE. This water contains, in each gallon, muriate of soda, 2.46; muriate of lime, 0.39; muriate of magnesia, 0.29; sulphate of lime, 1.41; carbonate of lime, 0.27; oxide of iron, 2.12; with some traces of silica and manganese. Sp. gr. 1.0007.

CHELTENHAM. In each pint, the Cheltenham chalybeate water contains, carbonate of soda, 0.5; sulphate of soda, 22.7; sulphate of magnesia, 6; sulphate of lime, 2.5; muriate of soda, 41.3; oxide of iron, 0.8; carbonic acid, 2.5, cubic inches. Sp. gr. 1.0092.

HARROWGATE. The Harrowgate chalybeate spring contains, in each gallon, muriate of soda, 300.4; muriate of lime, 22; muriate of magnesia, 9.9; sulphate of lime, 1.86; carbonate of lime, 6.7; carbonate of magnesia, 0.8; oxide of iron, 2.40, with a small portion of silica. Sp. gr. 1.0053.

SPA, a small town of the Low Countries, contains seven mineral springs, the principal of which is called Pouhon. These waters, the temperature of which is 10° Centig., (50° of Fahr.), contain, according to Mr. Jones, in 231 cubic inches of water, carbonic acid, 262 cubic inches; oxide of iron, gr. 5.24; carbonates of lime, 9.87; of magnesia, 1.80; of soda, 2.27; muriate of soda, 1.6; sulphate of soda, 0.99; silica, 2.26; alumine, 0.29.

Spa artificial mineral water, P. Water charged with five times its volume of carbonic acid, 650; subcarbon. of soda, 0.1; ditto of magnesia, 0.2; ditto of iron and muriate of soda, āā. 9.05.

D. & M. OF ADM. From three to four glasses a day, increasing by degrees to twelve or fifteen. In injections, lotions, and baths.

PYRMONT, a small town in the circle of Westphalia, contains a great many mineral springs, possessing different properties. The principal one, and the most frequented, is called *Holy Well.* The temperature of its waters is about 13° Centig. (55½° Fahr.) According to Westrumb, one hundred pounds contain muriate of soda, gr. 122; muriate of magnesia, 134; sulphate of soda, 289; sulphate of magnesia, 547; carbonate of iron, 105.5; carbonate of lime, 348.75; carbonate of magnesia, 339; resinous principles, 9. From this analysis, we see that these waters resemble very much several purgative saline waters, the effects of which they have sometimes produced; but as they act more frequently as tonic, we have thought proper to place them here. The waters of the other springs do not contain iron, and are either saline or simply acidulous.

Artificial Pyrmont Water, P. Water containing five times its volume of carbonic acid, 650; muriate of soda, 0.1; sulphate of magnesia, 0.4; carbonate of magnesia, 0.6; carbonate of iron, 0.05.

D. & M. OF ADM. About a quart a day, either pure or mixed with wine or other drinks.

PASSY, near Paris, possesses five fountains close to each other, two of which are called *old* and three *new.* These latter possess very active properties, and are more astringent than tonic when fresh from the spring; but when they have been exposed to the influence of the sun for several months, they deposit the greatest part of the iron they contain in solution, and are then called *purified waters,* which are the most commonly used. With respect to the *old* fountains, their action is scarcely appreciable, and are entirely abandoned. According to Deyeux's analysis, the *new* fountains contain, when just taken from the spring, sulphate of lime, gr. 43; ditto of protoxide of iron, 17.24; ditto of magnesia, 22; ditto of alumina and potassa, 7; muriate of soda, 6.06; carbonate of iron, 0.08; carbonic acid gas, 0.02. After being rested for some time, they contain, sulphate of lime, gr. 44.4; ditto of magnesia, 27.7; ditto of alumina and potassa, 7.6; ditto of protoxide of iron, 1.2; muriate of soda, 6.7.

D. & M. OF ADM. *Internally*, when purified, from three to four tumblerfulls, and even as much as two pints, either the simple water or with wine. The fresh water just from the spring is used *externally* in lotions, shower-bath, injections, &c.

FORGES. This place possesses three fountains, *La Reinette*, *La Royale*, and *La Cardinale*. According to Mr. Robert's analysis, a pint of water of the last mentioned spring contains carbonic acid gas, twice its volume; carbonate of lime, gr. three-fourths; ditto of iron, five-sixths; muriate of soda, nine-tenths; ditto of magnesia, one-fifth; sulphate of lime, one-half; ditto of magnesia, nine-tenths; silica, one-sixth. The waters of the two first mentioned fountains contain nearly the same substances, but in smaller proportions.

D. & M. OF ADM. As a drink, from one to seven tumblerfulls a day, either with or without wine.

ROUEN. The fountains in this place are three in number. Their temperature is from 50° to 55° Fahr.

According to Dubuc's analysis, a pint of this water contains, carbonic acid gas, one-thirtieth of its volume; carbonate of iron, gr. one; ditto of lime, three-fourths; muriate of lime, three; extractive matter, from one to two.

D. & M. OF ADM. As a drink, from four to five tumblerfulls every morning.

SCHOOLEY'S MOUNTAIN, U. S. *Chalybeate Springs*. Schooley's Mountain is a part of the granitic chain, extending in a north-east and south-west direction nearly across the state of New Jersey. Its height is more than six hundred feet from its base, and not more than eleven hundred feet above the level of the ocean. This elevation is sufficient to influence the temperature of these springs. The temperature of the water of the copious springs near the top of the mountain is only 50°, while that of the deepest and coolest wells in New York is 54° Fahr. These mineral springs are situated between two beautiful wooded mountains, and issue from a fissure of the perpendicular side or a rock, and the quantity of water gushing from this fissure may be estimated at six hogsheads per day.

According to Dr. W. J. M'Neven, this water contains extractive, 0.92; muriate of soda, 0.43; muriate of lime, 2.40; muriate of magnesia, 0.50; carbonate of lime, 7.99; sulphate of lime, 0.65; carbonate of magnesia, 0.40; silex, 0.80; carbonated oxide of iron, 2.00; loss, 0.41.

PITTSBURGH, U. S. This spring is situated four miles south-west of the city of Pittsburgh. When the water remains undisturbed for a few hours, it is covered with a white pellicle; its taste is lively and rather pungent, with a peculiar ferruginous flavour, and it exhales an odour of sulphuretted hydrogen gas. Its temperature is very generally uniform, and is of 54° Fahr. The specific gravity of the water differs little from the purest water, and is as 1002 to 1000.

According to Dr. Meade's analysis, it contains muriate of soda, 2 ; muriate of magnesia, ½ ; oxide of iron, 1 ; sulphate of lime, ½ ; carbonic acid gas in one quart of water, 18 cubic inches.

TONIC VEGETABLE SUBSTANCES.

Family Rubiaceæ.

Peruvian Bark. *Cortex peruvianus*, is the name given to the bark of several species of the genus *cinchona*, trees growing in Peru and several other parts of South America.

B. C. Trunk erect; leaves opposite; flowers, in terminal panicles; calix adherent, 5-toothed; corolla monopetalous, 5-parted; 5 stamens, enclosed in the interior of the tube; capsule inferior, elongated, ovoid, bilocular and bivalve; fruit dehiscent, with two cells containing several winged seeds.

The number of sorts of bark, at present found in commerce under the generic name of cinchona, is very considerable; and notwithstanding the many and important labours which have been bestowed on this subject, there still exists a great confusion respecting the proper botanical characters belonging to each species of this genus. However, we shall divide the cinchonæ into four different species, viz:—

Gray Loxa, or Crown Bark. The bark belonging to this species is principally furnished by the *Cinchona condaminea*, Humboldt, *C. officinalis*, Lin., which grows in Peru, and especially in the province of Loxa.

B. C. Trunk, 15 to 18 feet high; bark chapped, of an ash-gray colour; leaves oval, shining, persistent; the petiole of a pink colour; flowers white or pink, odorous.

P. P. This bark is curled up, of a tubular shape, from eight to ten inches long, sometimes flattened, generally very thin, compact, tolerably fibrous, of an even fracture, slightly odorous, bitter and astringent, but leaving soon after a sweetish impression on the palate. Externally, this bark is rugose, unequal, furnished with a thin epidermis of a gray or bluish colour, with superficial transverse fissures, and covered with different kinds of lichens. The interior surface is smooth, of a yellow or pale red colour. The powder is remarkable for its fallow colour.

C. P. According to Pelletier and Caventou, the Loxa bark contains, 1st, *cinchonia*, (see page 101) united with a peculiar acid, discovered by Vauquelin, and named *kinic;* 2d, a green fatty matter; 3d, a colouring matter, called by Reuss, who discovered it, *cinchonic red;* 4th, some tannin; 5th, a yellow colouring matter; 6th, kinate of lime; 7th, gum; 8th, starch and lignin. Cinchonia enters into its composition in the proportion of $\frac{1}{500}$th.

Yellow Bark. *Calisaya.* Royal yellow bark. This species is furnished bý the *Cinchona cordifolia,* (Mutis), a very common tree in the province of Calisaya in Peru.

B. C. Trunk, from 20 to 25 feet high; bark of a dark gray; leaves oval, lanceolate, of a violet colour, tomentose underneath; pubescent outside; capsule almost fusiform, one inch long.

P. P. A very compact bark, heavy, more or less rolled, of the size of the finger, covered with a rough, gray epidermis, of a thickness proportionate to that of the bark, with slight transversal fissures; its external surface is often partially covered with lichens; this is the *Quill yellow bark, Calisaya arrollenda.* That which is in flat, but sometimes rolled up pieces of various sizes and forms, and deprived of epidermis, is the *Choice Calisaya bark, Calisaya plancha.* Its fracture is fibrous, shining; its colour, internally, is of a light yellow, becoming deeper when it has been wet; almost void of smell, and of an extremely bitter taste, but without being styptic. The powder is of a lighter yellow than the bark itself.

C. P. The composition of this bark differs from that of the preceding only in one particular, that it contains *quinia* instead of *cinchonia,* (see page 102), in the proportion of $\frac{1}{100}$th, or thereabouts.

The Orange Bark, which is derived from the *Cinchona lancifolia,* (Mutis), is now very scarce in commerce, and consequently very seldom used. This bark is thick, in flat or curled up pieces, heavy, compact, hard, covered with a grayish epidermis, rough, with deep fissures, chapped, of a reddish-brown colour internally, of an aromatic smell; of a bitter, aromatic and slightly astringent taste. It has not been analyzed.

Red Bark. The bark which is collected under this denomination, is mostly furnished by the *Cinchona oblongi-*

folia, (Mutis), which abounds in the forests of Santa Fé de Bogotà.

B. C. Trunk, from 80 to 100 feet high; leaves oblong, from 1 to 2 feet long; flowers white, odorous, forming a terminal panicle about 1 foot long; capsules oblong, 1½ inch in length.

P. P. This bark is generally in flat pieces, sometimes curled up, heavy, compact, covered with a rugose epidermis with irregular fissures of a whitish colour on the outside, of a red-brown on the inside. Within is a coat of a resinous appearance, compact, brittle, and of a deep red colour. The lignous part is fibrous, of a rusty red; the powder is one shade darker. This bark has but little smell, its taste is less bitter than that of the others, but very styptic and unpleasant.

C. P. Its composition is nearly similar to that of the preceding species of bark; except that it contains both cinchonia and quinia in the proportion of $\frac{8}{1000}$ths of the former, and of the latter $\frac{17}{1000}$ths.

White Bark. This kind is very scarce in commerce, and should be referred to the *Cinchona ovalifolia* (Mutis), which tree is found in the Andes of Peru, and in New Grenada.

B. C. Trunk, eight or ten feet high; bark grayish, chapped, small branches quadrangular, silky: leaves oval, the superior face shining, the inferior silky; flowers white, small; capsules ovoid, fusiform, one inch long.

P. P. Bark thin, quilled, brittle, covered with a whitish epidermis, fracture fibrous, of a tawny colour internally, of a bitter, nauseating, and slightly harsh taste.

C. P. The composition of this kind hardly differs from the preceding.

Such are the principal species of barks admitted by the pharmacologists of our day. There are besides many others, which are found in commerce together with these; but as they are but little known and as little used, we do not think it necessary to describe them here.

Cold, but particularly boiling water, takes up a portion of the active principles of the various kinds of cinchona; but the decoction becomes turbid on cooling, and is very soon altered. Alcohol is their best solvent.

Incomp. Subst. Concentrated acids, salts of iron, sulphate of zinc, nitrate of silver, deuto-chloride of mercury. The tartrate of antimony and potassa, the infusions of camomile, Columbo, catechu, rhubarb, &c. produce an abundant precipitate in the infusions and decoctions of several species of bark.

Th. E. Given in small doses, the Peruvian bark acts locally on the stomach and intestinal canal; it increases the vitality of these organs, stimulates the digestive functions, and renders the assimilation of the alimentary substances more rapid and perfect; but this tonic action is almost exclusively limited to the tissues with which the bark comes in contact; whilst, under the influence of larger doses we perceive the manifestation of a series of general phenomena, which leaves no doubt that this action is extended to the whole economy. In fact, after the administration of a common dose of bark, under any shape, the mouth becomes dry; the stomach experiences a sensation of heat which extends very soon to the whole abdomen; the circulation is quicker, the pulse becomes more active and full; the general heat and cutaneous perspiration are increased; finally, a sensation of vigour more or less appreciable and permanent is experienced, which characterizes the tonic medication. Should the dose of bark be too strong, or its use be too long continued, or finally, the digestive canal, or any other organ be in a state of inflammation, all the phenomena we have just mentioned become more intense, and all the symptoms of phlegmasia are aggravated. Uneasiness and dry heat are felt at the epigastric region; nausea, borborygm, vomiting or alvine evacuations take place; a violent thirst and an acrid and burning heat are experienced; the pulse is hard and frequent; the temporal arteries beat violently. All these symptoms are followed by a violent cephalalgia, epistaxis, an extreme agitation, dryness of the skin, and even, in some cases, by delirium, sleeplessness, irregular motions, and all the signs of an irritation in the encephalon.

After all we have just said of the immediate effects of the Peruvian bark, it is easily perceived that this substance produces on the animal economy a tonic action of the most energetic character. The intensity of this action varies with the different species of cinchona, and according to the quantity of *cinchonia* and *quinia* they contain; for it is now ascertained that they owe their tonic properties to these principles. Finally, several species, the red bark for instance, possess, besides, very decided astringent properties, for which they are indebted to the presence of tannin. Thus, when bark is to be exhibited in substance, in which state it is not now so frequently used as it was formerly, it is proper to choose some particular species in preference to others, according to the peculiarities of the indications.

One of the most remarkable actions of Peruvian bark, to which it is indebted for a great part of the celebrity it has enjoyed for so long a time, is the action it exercises on intermittent diseases. No one is ignorant, that, when judiciously administered, it prevents, almost infallibly, the periodical return of the symptoms which characterize these affections. What is the cause of this singular property? does it proceed from the powerfully tonic influence of this substance, as some pretend to say? or will it be admitted that it acts upon the nervous system in a specific manner, as is the opinion of others? In the present state of the science it is almost impossible to decide this question, and we are of Dr. Barbier's opinion, that we shall not account satisfactorily for the antiperiodic action of the bark, until we are acquainted with the cause of the regular return of these morbid motions at equal intervals, and at regular hours.

The Peruvian bark is administered as a tonic, and principally as a febrifuge. As a tonic its employment is now considerably limited, notwithstanding its efficacy in most of the cases in which the administration of strengthening medicines is indicated. It has been prescribed with success in adynamic and gangrenous affections, in typhoid fevers, attended with an extreme prostation of strength, in gangrenous angina, passive hemorrhages, accompanied with great debility, &c. It is likewise very useful in gout, chronic rheumatism, scrofula, and scorbutic diseases. In limited doses it has proved beneficial in dyspepsia without irritating the stomach, in cases of obstinate and chronic diarrhœa, in old catarrhs, and generally in all kinds of very old phlegmasiæ, of a moderate intensity, of the mucous membranes, the continuation of which seems to be owing to the atony of the tissues; these often yield more easily to the exhibition of tonic remedies than to an antiphlogistic treatment, which very often seems to aggravate and render them more obstinate. Externally, it is used in powder or in concentrated decoction, in cases of atonic ulcers, of wounds complicated with hospital gangrene, and of wet gangrene; and exhibited in lotions, injections, gargles, in certain gangrenous or simply chronic angina, in mucous discharges continued by the atony of the membranes; in cases of prolapsus of the rectum and vagina, &c.

It is principally as a febrifuge that this remedy is used, and its exhibition is generally attended with the happiest consequences. It is administered in larger doses in these cases than in those already mentioned. In common intermittent fevers it is given in large doses, sometimes before the paroxysm; or else (and this is the best mode of administration), in small doses during the whole continuance of the apyrexia, so as to moderate the intensity of the coming paroxysm, and cause it to disappear gradually. We must always avoid giving this remedy during the fever; a different procedure would increase instead of lessening its intensity, and render it more obstinate. However, in remittent fevers, when the fits are separated by very short intervals, the bark may be exhibited towards the end of the exacerbation, and the dose should be then administered all at once, in order that it may act before the return of the next paroxysm. But before resorting to the employment of this useful medicine, it is always proper to oppose, by appropriate means, the complications of this disease, which often disappear rapidly under the influence of these remedial means, after a few fits, as it has been frequently observed in the vernal intermittent fevers. In malignant intermittent fevers, with extreme prostration, the violence and severity of which are very great, there must be no hesitation in exhibiting the bark at once, in large doses, during the interval of the paroxysms, so as to prevent the return of the exacerbation; for in most cases, it is the only means in our power to save the life of the patient; and this means seldom fails in its effect when properly and timely administered. It is likewise employed with much advantage in periodical neuralgiæ.

The quantum of bark to be administered in a single dose, or in several doses, during the interval of the paroxysms, varies according to numerous circumstances, amongst which we will particularly mention, the age and temperament of the patient, and the intensity of the disease. In most cases, it is from one drachm to half an ounce; it may be increased by degrees and carried, under certain circumstances, as far as one and even two ounces.

The preparations of bark are extremely numerous; the powder was that which was until lately most commonly and successfully used; but it is now generally superseded by the salts of quinia and cinchonia, as we shall mention in the sequel. The powder is generally of rather difficult administration on account of its volume, and of its very unpleasant taste; it produces sometimes nausea, vomiting, and alvine evacuations. It will be proper in this case to substitute for it another preparation more appropriate to the stomach of the patient, or else we must unite it with some aromatic substances, or a small quantity of opium; for it has been remarked that when bark produces vomiting, it loses all its febrifuge properties.

D. & M. OF ADM. *Internally.* Powder. As a tonic, gr.x. to ʒss. As a febrifuge, ʒj. to ℥j. and even ℥ij. in several doses.——*Infusum Cinchonæ*, L., E., U. S. (Bruised Peruvian bark, ℥j.; water, 0j.)—D. (Peruvian bark, ℥j.; water, f.℥xii.) ——*Infusum Cinchonæ cum aqua calcis*, U. S. (Pulverized Peruvian bark, ℥j.; lime water, 0j.)——*Infusum Cinchonæ cum magnesia*, U. S. (Peruvian bark, ℥j.; magnesia, ʒj.; cold water, 0j.)——*Decoctum Cinchonæ*, E., U. S. (Pulverized Peruvian bark, ℥j.; water, 0jss.)—L., D. (Bruised Peruvian bark, ℥j.; water, 0j.)

—P. (Peruvian bark, 16; sub-carbonate of potassa, 1; water, 500; syrup of bark, 8.)——*Compound decoction of bark*, P. (Loxa bark, 32; senna leaves and sulphate of soda, āā. 8; muriate of ammonia, 1; compound syrup of senna, 32; water, 1000.)——*Tonic mixture*, Paris H. (Peruvian bark, ʒjss.; simple syrup, ℥j.; water, ℥iv.)

Aqueous extract, P., L., D., Pol., Pr., Den., R. *Alcoholic extract*, L., E., D., P. Doses from gr.x. to ʒj. *Tonic mixture*, Paris H. (Extract of bark, 1 part; syrup of tolu and water, āā. 8.)

Tinctura Cinchonæ, U. S. (Bruised Peruvian bark, ℥vj.; diluted alcohol, Oijss.) —L. (Pulv. Peruvian bark, ℥vij.; proof spirit, Oij.)—E. (Pulv. bark, ℥iv.; proof spirit, ℔ijss.)—D., P., R., Pr., Pol., F., Den., B. (Pul. bark, ℥iv.; proof spirit, Oij.) The dose is from ʒss. to ʒiv.——*Dr. Paris's tonic mixture*, (Decoction of bark, ℥iv.; tincture of bark, ℥ss.; aromatic confection, ℈j.; aromatic volatile spirit, ʒj.) Dose, a table-spoonful two or three times a day.——*Tinctura Cinchonæ composita*, or *Huxham's tincture of bark*, L., E., U. S., D., P. (Pulverized bark, ℥ij.; orange peel, ℥jss.; serpentaria, ʒiij.; saffron, ʒj.; cochineal, ℈ij. or red sanders, ʒj.; diluted alcohol, U. S. Ojss., L., E., D., f.℥xx., P. ℔ij.——*Tinctura kinæ composita*, Pr. (Peruvian bark, 3; gentian root and orange peel, āā. 1; cinnamon water, 8; alcohol, 16.——*Tinctura kinæ amara*, F. (Peruvian bark, 8; gentian root and orange peel, āā. 3; alcohol, 48.) Dose, from ʒj. to ʒiv.——*Tinctura Cinchona ammoniata*, L. (Pulverized Peruvian bark, ℥iv.; aromatic spirit of ammonia, Oij.) Dose, from ʒss. to ʒij.——*Tinctura cinchona ætherea*, P. (Peruvian bark, 32; cascarilla, 8; cinnamon, 6; saffron, 1; Spanish wine and alcohol, āā. 150; sulphuric ether, 3.) Dose ʒss. to ʒj.

Vinum Cinchonæ, P. (Peruvian bark, 1; alcohol, 2; claret wine, 12.) Dose from ℥ij. to ℥iv.——*Vinum Cinchonæ compositum*, P. (Peruvian bark, 123; quassia, Winter's bark and bitter oranges, āā. 8; alcohol, 250; wine, 1500.——*Vinum amarum*, B. (Peruvian bark, 8; gentian, 4; orange peel, 2; canella alba, 1; alcohol, 32; Spanish wine, 384.)——*Elixir balsamico-stomachicum Hoffmanni*, Den. (Peruvian bark, orange peel, and sub-carbonate of potassa, āā. 2; extracts of holly-thistle, of small centaury, and of myrrh, āā. 1; Madeira wine, 48.)

Syrupus Cinchonæ, P. (Loxa bark, 64; water, 625; sugar, 250.)——*Syrupus Cinchonæ vinosus*, P. (Loxa bark, 32; extract of bark, 12; Lunel wine, 250; alcohol, 16; sugar, 375.) Dose, ℥ss. to ℥ij.

Externally. *Concentrated decoctions*, in lotions, injections, gargles, enema, &c. ——*Antiseptic poultice*, P. (Barley meal, 48; pulverized bark, 8; camphor, 1; water, 125.)——*Ceratrum Cinchonæ*, P. (Simple cerate, 8; alcoholic extract of bark, 1.)——*Antiseptic enema*, Paris H. (Peruvian bark, ℥j.; camphor, ʒij.; water, ℔ij.)

Cinchonia. A vegetable alkaline substance, existing in the loxa and red bark, combined with kinic acid, and discovered by Gomez, who gave it the name of *Cinchonine*.

P. P. In very fine prismatic needles, or in white, transparent and crystalline scales; of a bitter taste, which is slowly perceived.

C. P. This substance, composed of carbon, 76.97; nitrogen, 9.02; hydrogen, 6.22; and oxygen, 7.97, according to Pelletier and Dumas, is soluble in alcohol, especially when warm; it is almost insoluble in cold water, and requires 2.500 times its weight of this liquid to dissolve it; ether and volatile oils dissolve it with difficulty. Exposed to the air, it slowly absorbs a small quantity of carbonic acid; heated, it decomposes before melting. It possesses all the properties of the alkalies, it unites with all the acids, and forms with most of them perfect neutral salts.

Prep. Let the pulverized loxa bark be acted upon by warm diluted hydrochloric acid; filter the liquor, and add to it an excess of lime; boil for a short time, filter again, and wash the residuum; then treat it with boiling alcohol, which dissolves the cinchonia only, and from which it is separated by evaporation. Should it contain any colouring matter, as is almost always the case, it must be combined with an acid, and the salt be discoloured by means of animal charcoal, then the vegetable base is separated again by the lime and alcohol.

Th. E. Cinchonia possesses all the tonic and febrifuge properties of the loxa bark, from which it is obtained; but it is almost out of use, on account of its almost complete insolubility.

D. & M. of Adm. In nature, gr.ij. to viij. in pills.

Sulphate of Cinchonia. *Cinchoniæ sulphas.* Neutral salt, produced by the combination of sulphuric acid with cinchonia.

P. P. Four-sided prismatic crystals, very short, and terminating in an acute angle, united in bundles, white, shining, flexible, inodorous, and intensely bitter.

C. P. This salt is composed of cinchonia, 100, and sulphuric acid, 13.021. It is insoluble in ether, soluble in 54 parts of cold water, and in almost any proportion of alcohol. It melts like wax at about 100° Centig., (212° Fahr.) At a higher temperature it becomes red, and decomposes. By the addition of a small quantity of sulphuric acid, it passes into a bi-sulphate, which dissolves in a little less than its weight of cold water.

Prep. It is obtained in a direct way, by combining the base with sulphuric acid, or else by evaporating and crystallizing the mother waters from which the sulphate of quinia has been extracted. (See page 103,)

Th. E. Dr. Chomel has proved, that this substance possesses the same properties as the sulphate of quinia, but in a smaller degree; and, in order, therefore, to obtain the same effects, a larger dose must be exhibited; this is the reason why it is not so much used. However, M. Bally, who has administered this salt with the greatest success, in the dose of from six to eight grains, in several intermittent fevers, prefers it to the sulphate of quinia, inasmuch as it is less irritating.

D. & M. of Adm. In nature, from ij. to xv. grs. in solution or in pills, with a bitter extract.——*Syrup of cinchonia*, F. M. (Sulphate of cinchonia, 3; simple syrup, 500; ℥j. to iij.)——*Wine of cinchonia*, F. M. (Sulph. of cinchon. 1; Madeira wine, 1000.) ℥j. to iv., and above, in several doses.——*Alcohol of cinchonia*, F. M. (Sulph. of cinchon. 1; alcohol, 64;) ʒj. to iv.

Quinia. A vegetable alkali, discovered by Pelletier and Caventou, in the calisaya, red, and loxa barks, &c.

P. P. Porous masses, whitish, of a bitter, unpleasant taste. This substance may be however obtained in crystals, composed of very minute needles, forming silky tufts.

C. P. According to Pelletier and Dumas, it is composed of carbon, 75; nitrogen, 8.45; hydrogen, 6.66; oxygen, 10.43. It is almost insoluble in cold water, and soluble in 5000 times its weight of boiling water; it is, on the contrary, very soluble in alcohol and ether. The fixed and volatile oils dissolve a small quantity of it. It is unalterable by exposure to the air. It melts when heated, and decomposes above 100° Centig. (212° Fahr.) Finally, it possesses the alkaline properties, and combines with the acids, to form soluble neutral salts.

Prep. It may be procured directly from the yellow bark, by process similar to that used in the preparation of cinchonia. (See page 102.) But, in general, it is preferable to procure it by the decomposition of the sulphate of quinia, by an excess of magnesia or lime. The precipitate is treated with boiling alcohol, which dissolves the quinia disengaged from its combination; it is afterwards isolated by evaporating the alcohol. It is purified by repeated solutions in this liquid.

Th. E. This substance acts in the same way as cinchonia, but it is not much used, except in the state of neutral salt, on account of its insolubility.

D. & M. of Adm. In nature, gr.j. to viij. in pills.

Sulphate of Quinia. *Sulphas quiniæ.* Neutral saline substance, resulting from the action of sulphuric acid upon quinia.

P. P. Very minute needles, of a pearly white, flexible, resembling fibrous and silky asbestos, united in radiated flakes, and of an excessively bitter taste.

C. P. This salt, according to M. Baup, is composed of quinia, 76.27; sulphuric acid, 8.47; water, 15.25; and when it is effloresced, it is composed of quinia, 86.12; sulphuric acid, 9.57; and water, 4.31. It is soluble in about seven hundred and forty parts of cold, and in thirty of boiling water. It becomes more soluble by the addition of a little sulphuric acid, which causes it to form a bi-sulphate. It dissolves easily in alcohol; in contact with the air, it effloresces rapidly; heated, it melts, and has the appearance of wax, and at 100° Centig. (212° Fahr.), it becomes phosphorescent, particularly when rubbed; it is then charged with vitreous electricity. At a higher temperature it is decomposed.

Prep. It is obtained in a direct manner by the process of

M. Henry. jun., which consists in boiling repeatedly the yellow bark in water acidulated with sulphuric acid. The colouring matter is separated by treating the liquor thus obtained with quick lime; then by submitting the precipitate, previously washed in cold water, to the action of alcohol at 36°; this tincture is afterwards evaporated, and the residue boiled in diluted sulphuric acid. Crystals of pure sulphate of quinia are obtained on cooling. From 1 kilogramme, (2 pounds, 3 ounces, 5 drachms, avoirdupois), of calisaya bark are produced about 12 grammes (3 drachms, 7 grains), of sulphate of quinia.

Th. E. The sulphate of quinia possesses the tonic and febrifuge properties of the bark, from which it is obtained. The experiments made a short time after its discovery, by MM. Double, Villermé, Chomel, &c., and since confirmed by all the practitioners of the civilized world, do not leave any doubt respecting its efficacy. The sulphate of quinia is now administered, with the greatest success, in all cases in which bark in substance was formerly exhibited, (see page 98), and we do not hesitate to consider the discovery of the active principles of Peruvian bark, as one of the most important to the healing art. In fact, the action of quinia, of cinchonia, and especially of their soluble salts is, in every instance, more certain than that of the bark in substance. On the other hand, they furnish the means of ascertaining precisely the dose of the active substance exhibited, and this knowledge is so much the more important, as the barks introduced in commerce under the generic name of cinchona, vary greatly with respect to their active properties, which, moreover, are extremely difficult, not to say impossible, to ascertain from the most careful inspection. Finally, and this is not one of their minor advantages, they facilitate the exhibition of this remedy, by offering its active principle in a very small volume, separated from the lignous parts, and from the other almost inert substances, which have the effect of fatiguing the digestive organs when administered in large doses.

D. & M. of Adm. Dose, from one grain to twelve, in solution or in pills.——*Dr. Sedillot's febrifuge pills.* (Sulphate of quinia, gr.xij.; opium, gr.iij.; for 12 pills.) One every hour.——*Syrup of sulphate of quinia*, F. M. (Sulphate of quinia, 1; simple syrup, 138.) Dose, from ℥j. to ℥ij.——*Wine of quinia*, F. M. (Sulphate of quinia, 6; Madeira wine, 1000.) Same doses.——*Tincture of quinia*, F. M. (Sulphate of quinia, 1; alcohol, 100.) From two to four drachms in a mixture.

Acetate of Quinia has been used in the same cases as the sulphate; but the latter is generally preferred, on account of its greater solubility. The acetate crystallizes in silky needles;

its taste is very bitter; it is little soluble in cold, but exceedingly so in boiling water; it precipitates and forms a mass on cooling.

Under the general denomination of cinchona have been comprehended several barks which are not produced by the real cinchona, and which might very properly be called *false cinchona*. In fact, they contain neither cinchonia nor quinia, and cannot, consequently, be substituted as a febrifuge, for the true species of cinchona just described; moreover, they fatigue the digestive organs, and very often produce alvine evacuations, and even vomiting. They are very rarely found in commerce, and are not used in France. The principal are—

1st. St. Domingo or Piton Bark, produced by the *Exostema floribunda*, Persoon, a tree which grows on the mountains of the West Indies. This bark is thin, light, fibrous, rolled, cylindric, of the size of the finger, of a dark gray colour externally, brown or bluish internally; of a weak and nauseous smell, of a bitter, very acid and unpleasant taste.

2d. The Caribbee or St. Lucia Bark, which is procured from the *Exostema caribæa,* Persoon, a tree growing in the West Indies. This bark is in convex fragments, covered with a yellow epidermis, commonly thin, but sometimes hard and spongy, with deep fissures, of a yellow red, or brown tint internally; of a fibrous texture, offering here and there small, shining crystalline points, of a very bitter taste and very faint smell.

3d. Cinchona Nueva, obtained from the *Portlandia grandiflora*, Lin., a tree growing at Surinam and Jamaica. Bark, twelve inches long, commonly curled up, smooth and whitish externally, of a pale red internally; of a fibrous texture, of a smell nearly similar to that of tan, of a sweetish, and afterwards astringent and disagreeable taste.

4th. The Bicolour Bark, which has for some time been considerably diffused throughout Italy, and the origin of which is as yet unknown. We are, however, induced to believe that it is produced by an *Exostema*. This bark is curled up in tubes, eight or ten inches long, about half a line thick, hard, brittle, smooth, of a yellowish-gray on the outside, of a deep brown inside, inodorous, of a bitter taste, very analogous to that of Angustura.

GEORGIA BARK. *Pinknega pubescens*, Mich., a small tree, native of the southern states of N. A., growing in wet and boggy soils.

B. C. This tree is very nearly allied to cinchona, from which it differs more by the habit than by the character of its fruit. The stem is from 15 to 25 feet high, leaves opposite, entire, oval, pointed at both ends, the lower face sub-tomentose; flowers in terminal panicles, composed of four or five flowers; flower rather large, of a bluish colour, marked with purple lines; calix 5-parted, one or two of the segments very large, resembling coloured bractes; corolla long, tubular, border recurved; stamens exserted and inserted near the base of the tube; capsule roundish, opening lengthway, with two valves in a contrary direction to the double dissepiment; seeds winged, transversely arranged upon the receptacle.

C. P. Mr. Farr, an able chemist of Philadelphia, had, several years ago, instituted an analysis of this bark, which, by unforeseen accidents, was not as satisfactory as he would have wished it. He informs us that it contains no quinia, but that he obtained from a decoction of several pounds of this bark a very small quantity of a crystallizable substance, which seemed to have some resemblance to cinchonia. But the quantity obtained was so small, that he, in a great measure, neglected to try it, in order to ascertain its chemical properties, as well as its physiological effects. He thinks, however, that this bark is even inferior to Carthagena bark, to which it is very nearly connected. Georgia bark is used as a substitute for Peruvian bark by the people of Georgia and the Floridas, in doses of ʒj. to ℥ss. It seems not to disagree so much with the stomach as Peruvian bark commonly does

Family Hederaceæ.

DOG-WOOD. LARGE-FLOWERED CORNEL. *Cornus florida*, Lin., a small tree, native of North America.

P. U. The bark.

B. C. Stem from 15 to 35 feet high; leaves about three inches in length, opposite, oval, acuminate. and entire; flowers garnished with a large white, seldom rose-coloured, involucrum, composed of four obcordate leaves, having all the appearance and being often mistaken for a corolla; the flowers are aggregate, small, of a greenish-yellow colour; calix monophyllous, 4-toothed; petals, 4; stamina, 4; fruit, an inferior drupe of a crimson colour, not crowned by the calix.

P. P. The bark of the root, stem and branches; taste very much like the *cinchona*; it is bitter, astringent, and slightly aromatic. Its astringency is, however, stronger than that of the Peruvian bark.

C. P. Besides tannin, colouring matter, gum, extractive, &c., this bark contains an alkaline proximate principle, discovered by Mr. G. W. Carpenter, and called by him *cornine*, and afterwards *cornia*.

Th. E. This bark, which has been ably investigated by Dr. Walker, of Virginia, is without doubt one of the most valuable native articles of North America. As a substitute for cinchona, which it resembles very much, both in its physical and chemical, as well as therapeutical properties, much has been written in commending it as a succedaneum. It seems, however, to be more particularly related to the *Cinchona oblongifolia;* but the Cornus florida differs from it, in its being rather more astringent. It is extensively employed by country practitioners in intermittent fevers, and the report they give of it is very favourable and satisfactory.

An alcoholic extract of the bark of the Cornus florida, resembling that of cinchona, but less bitter and more astringent, and containing the cornia, has been prepared, and exhibited with success by several practitioners, in the same doses as the alcoholic extract of cinchona.

D. & M. of Adm. The same as with cinchona.

Quassia. *Quassiæ lignum. Quassia amara*, Lin. *Q. excelsa*, of the English and American pharmacopœiæ. A tree growing in Surinam, Jamaica, and Guyana.

P. U. The wood and the bark of the root.

B. C. Leaves scattered, smooth, quino-pinnate, common petiole reddish; folioles sessile, oval, with reddish nerves; flowers red, in multiflore spikes, hermaphrodite, having a bractea at their base; calix small; corolla inserted on a cylindrical hipogynous disk, truncated; ovary globular, with five cells soldered at their summit; fruit, five black drupes, ovoid, distinct, containing a monospermous nut.

P. P. The root of quassia is of the size of the arm, cylindrical, covered with a thin grayish bark, with slight fissures. The wood is found in commerce in large pieces; it is white, inclining to yellow, especially when it has been exposed to the air; light and very difficult to reduce to powder. These different parts, and especially the bark, are inodorous, of an extremely bitter taste, without any mixture of acridity or astringency.

C. P. This substance contains a bitter principle called quassine, discovered by Thomson, a small quantity of volatile oil, some gum, lignous fibres, and several salts, with base of lime. Alcohol, and even cold water, take up its active principles.

Quassine is of a brown yellow colour, transparent, uncrystallizable, very soluble in water and diluted alcohol, and insoluble in ether.

Incomp. Subst. Nitrate of silver, acetate of lead.

Th. E. Quassia is a very energetic tonic, totally devoid of astringency and acidity. It does not at all act as an excitant; for even in large doses it does not accelerate the circulation, nor does it raise the temperature of the animal heat. It strengthens the tissues, promotes the action of the alimentary canal, without irritating it, or producing, like several other bitters, nausea and alvine evacuations. It is exhibited with advantage in all cases requiring the employment of tonics, and especially in dyspepsia proceeding from atony of the digestive organs, in certain cases of gout, in chronic catarrhs, and in cases of mucous discharges maintained by debility of the organs, such as leucorrhœa, blennorrhœa, and diarrhœa, unattended with inflammation. It has also been employed with good success, in some kinds of vomiting, purely spasmodic. Finally, it has been recommended as febrifuge, and has in fact been exhibited with success in intermittent fevers; but in serious and obstinate intermittent fevers, it cannot be efficaciously substituted for the Peruvian bark.

D. & M. of Adm. Powder, (very seldom) ℈j. to ʒss.—Infusion, ʒj. to water, 0j. ——*Infusum quassiæ*, U. S. (Rasped quassia, ʒj.; cold water, 0ss.)—L. (Quassia, ℈j.—(E. ʒss.) boiling water, 0ss.) Dose, from ℥j. to ℥iij. *Tonic mixture.* (Infusion of quassia, ʒx.; tincture of columbo, ʒj.; tincture of muriate of iron, gutt. x.;) to take at once.——*Infusum quassiæ cum sulphate zinci*, U. S. (Rasped quassia, ʒj.; sulphate of zinc, gr.viij.; cold water, 0ss.)——*Tinctura quassiæ*, D., E., U. S. (Quassia, ℥j.; diluted alcohol, 0ij.—E. 0ijss.) Dose, from ♏xx. to lx.——*Extractum quassiæ*, R., Pol., A. Dose, from ℈ss. to ʒss.

Simarouba. *Cortex simaroubæ.* *Quassia simarouba*, Lin. A large tree growing in Guyana, St. Domingo, Jamaica.

P. U. The bark of the root.

B. C. Leaves alternate, composed of 10 to 16 alternate folioles; flowers dioicous, small, whitish, disposed in panicles. Male flowers with ten stamens; female flowers ten abortive stamens.

P. P. Bark thin, light, several feet long, curled up, of a fibrous texture, difficult to pulverize, of a grayish colour externally, yellow internally, inodorous, of a bitter taste without any astringency.

C. P. This substance contains, according to M. Morin's Analysis, 1st, some quassine; 2d, a resinous matter; 3d, a volatile oil, of a smell very similar to that of benzoin; 4th, some malic and a trace of gallic acid; 5th, salts with base of ammonia, potassa, and lime; 6th, oxide of iron; 7th, silica; 8th, almine; and 9th, lignous matter. Alcohol and water dissolve its active principles; the infusion is more bitter than the decoction, which gets turbid on cooling.

Incomp. Subst. Alkaline carbonates, corrosive sublimate, acetate of lead, infusion of catechu, galls, yellow bark, &c.

Th. E. The properties of this substance are very similar to those of the preceding article. It may be administered with much effect as a tonic, in all cases in which quassia is used, especially in the last stage of dysentery, in certain chronic diarrhϾ, in dyspepsia, &c. It has likewise been recommended as a febrifuge in intermittent fevers, and sometimes with advantage.

D. & M. of Adm. Powder, (very seldom) ℈j. to ʒss. Decoction or infusion, ʒj. to ʒiij. to two pints of water.——*Infusum simaroubæ*, L. (Simarouba, ʒj.; boiling water, Oj.) Dose from two to three ounces.

Family Rutaceæ.

Angustura Bark. *Cortex angusturæ. Gallipæa febrifuga*, Aug. Saint-Hilaire. *Cusparia febrifuga*, Humb. and *Bonplandia trifoliata*, Willd. A large tree of South America.

P. U. The bark.

B. C. Trunk erect, sixty or eighty feet high, bark grayish; leaves trifoliate, petiole eight or ten inches long, folioles oval, elongated, shining; flowers white, in erect racemes in the axilla of the superior leaves; calix sub-campanulate; corolla, five petals adherent at their base, five or six stameus, only two of which are fertile; ovary five-celled; fruit, five monospermous capsules, united on a common axis.

P. P. This bark is sold in fragments more or less curled up, and some entirely flat, several inches long, by one or two lines thick, covered with a thin and sometimes thick epidermis, white, smooth or slightly uneven. Their internal surface is lamellous, of a yellow-brown colour, the intermediate substance of a compact texture, of a deep fallow colour; their fracture is even and resinous, their smell strong, *sui generis*, their taste very bitter, slightly aromatic and persistent.

C. P. The composition of this substance is not well ascertained. We know, nevertheless, that it contains neither tannin nor gallic acid, but a very copious bitter principle, a matter containing nitrogen, which, according to Mr. T. Thomson, is analogous to cinchonia, some carbonate of ammonia, and a little essential oil. The remedial principles are soluble in water and alcohol.

Incomp. Subst. Concentrated acids, potassa, infusion of gall-nuts, of yellow bark, sulphates of iron and copper, and corrosive sublimate.

Th. E. The real Augustura bark possesses tonic and stimulating properties. In too large doses, it produces nausea and vomiting; in moderate doses, it stimulates the digestive organs, increases the appetite, facilitates digestion, and eventually exercises a tonic action upon the whole economy. It was highly recommended, as a febrifuge, at its introduction into the materia medica, and was even considered as superior to Peruvian bark; but from the observations of M. Alibert, it has no title to this commendation, nor can it be even substituted for cinchona. However, it is exhibited with success in atonic affections of the digestive canal, such as serous diarrhœa, dyspepsia, &c. It may be useful in all cases where the exhibition of corroborants are indicated; but it must not be used whenever any inflammation, either acute or chronic, exists.

D. & M. OF ADM. Powder, gr.x. to ℈j.——*Infusum Angusturæ*, U. S.——*I. cuspariæ*, L. (Angustura, ʒij.; boiling water, Oss.) Dose, from ℥j. to ℥iij. *Tonic mixture*, PARIS H. (Infusion of Angustura, ℥vj.; cinnamon water, ℥ss.; tincture of opium, gutt. xx.) A table-spoonful thrice a day. *Tonic and astringent mixture.* (Infusion of Angustura, ℥j.; tincture of catechu, ʒj.; pulverized ipecacuanha, gr.x.) For two doses.——*Tinctura Angusturæ*, D. (Angustura, ℥ij.; proof spirit, Oij.)—B. (Angustura, 1 part; alcohol, 2 parts.)——*Tinctura Bonplandiæ trifoliatæ*, B. (Angustura, ℥ij.; proof spirit, ℔ijss.) Dose, from ʒj. to ij.——*Extractum Angusturæ*, B. Dose, from ℈j. to ʒss.

Family Menispermæ.

COLUMBO. *Colombæ radix. Menispermum palmatum*, Lam. *Cocculus palmatus*, De Cand. Sarmentose shrub, growing in Africa, in Madagascar, and in the East Indies.

P. U. The root.

B. C. Stem climbing, simple, furnished with long hair; leaves orbicular, five-nerved, and five distant and palmated lobes; male flowers supported by simple or ramose peduncles, longer than the leaves; calix, six-parted; corolla six fleshy petals, six stamens longer than the petals; female flowers unknown.

P. P. This root is thick, fibrous, and composed of fusiform ramifications. It is found in commerce in sections of about one inch and a half in diameter, or in pieces two or three inches long, covered with a thick yellowish bark, easily detached, and offering a rugose epidermis of a brown or olive colour. The parenchyma is of a spongy texture, of a greenish-yellow colour, presenting several concentric zones; its taste is bitter, and its smell unpleasant.

C. P. Columbo contains, according to M. Planche, starch, 33; gum, 9; a principle containing nitrogen, 6; a yellow bitter matter, 13; a little volatile oil; some salts of lime and potassa; some oxide of iron, silica, and lignous matter. Tincture of iodine colours it of a deep blue*. The principles soluble in boiling water, constitute about a third of the weight of this root. Alcohol dissolves still a greater quantity of it.

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* Dr. Conwell has lately obtained from the Columbo root an alkaline principle, which he calls *Columbia*. He has not been able as yet to obtain this substance, per se, in a crystalline form, but in a white and arid powder of a very

Incomp. Subst. Infusion of gall-nuts, of yellow bark, acetate of lead, corrosive sublimate, and lime-water.

Th. E. The action of this substance on the animal economy is very similar to that of quassia; that is, it is a mere bitter, without a mixture of astringency or acridity; however, in too large doses, it produces nausea and vomiting; but, administered in a suitable manner, it strengthens the organs, without acting as a stimulant. It is advantageously exhibited in chronic diarrhœa, in dysentery, atonic diseases of the stomach and of the intestinal canal, and generally in all cases requiring the use of tonics. In small doses, it is very useful to stop the nausea and vomiting, so often attendant on the beginning of pregnancy, or which are produced by a spasmodic state of the stomach.

D. & M. of Adm. Powder, from gr.x. to ʒss.——*Infusum colombæ*, E., U. S.——*I. Colombæ*, L. (Columbo root, ʒj.; boiling water, Oss.)——*Decoctum Colombæ Compositum*, U. S. (Columbo and quassia, āā. ʒij.; orange peel, ʒj.; pulverised rhubarb, ℈j.; carbonate of potassa, ʒss.; water, f.℥xx.; boil down to a pint, and add tincture of lavender, f.ʒss.)——*Tinctura Colombæ*, L., E., D., U. S. (Columbo, ℥ijss.; diluted alcohol, Oijss.) Dose, ʒj. to ℥iij.

The substance which we have just described has become very rare in commerce. It is substituted by another root very similar to it, which M. Guibourt calls false Columbo root. It comes from Algiers and the northern coast of Africa, but we do not know what plant furnishes it. It differs from the true Columbo by its fallow gray colour, marked with circular striæ; by its orange yellow colour internally; its bitter and sweetish taste, and its almost insensible odour. On the other hand, it contains no starch, and is not coloured by iodine; it imparts a yellow colour to ether. The watery infusion reddens litmus, and sulphate of iron forms with it a blackish-green precipitate. These differences pointed out by M. Guibourt, will be sufficient to avoid any error respecting this substance.

Family Gentianeæ.

Gentian. *Gentianæ radix*. *Gentiana lutea*, Lin., a perennial plant, indigenous to Europe, growing on mountainous

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bitter taste. The *Sulphate of Columbia* crystallizes in delicate prismatic crystals, and the *hydro-chlorate* in starry points, somewhat deliquescent. He obtained the sulphate by boiling the powdered root with water acidulated with sulphuric acid; filtering while hot, and evaporating; the crystals soon appear in the form of beautiful minute prisms.

parts. It grows abundantly in Auvergne, in the Vosge Pyrenees, the Alps, and blossoms in May.

P. U. The root.

B. C. Root perpendicular, branched ; stem erect, two or three feet high ; amplexicaule, oval, of a light green, five or seven nerved ; flowers yellow, sp corolla regular, rosaceous ; stamens alternate with the lobes of the corolla ; a erect ; two stigmas ; no styles, ovary and capsule fusiform, unilocular ; frui and membranous on the edges.

P. P. The gentian root is elongated, of the size of finger, wrinkled, twisted, brown externally, of a lively yel colour, and of a spongy texture internally, of a slightly n seous smell, of a very bitter taste, but devoid of astringency

C. P. According to Henry and Caventou, it contains a culiar bitter principle, which they have called *Gentianine,* oleo-resinous matter, very similar to bird-lime, a greenish o uncrystallizable sugar, some gum, a yellow colouring matt and woody substance. Water, alcohol, and ether, dissolve th active parts of this root.

INCOMP. SUBST. Acetate of lead, sulphate of iron, &c.

TH. E. Gentian is, unquestionably, one of the most powerful, and most used of all the bitters contained in the materi medica. Like the preceding substance, it exercises upon th economy a tonic action merely. However, the volatile and odorous principle which the green plant contains, and of which but an inconsiderable quantity is to be found when desiccated, seem to act on the nervous system, and to cause, according to Planche, nausea, vomiting, and a pretty long inebriation. It is administered often and successfully in all cases requiring the exhibition of tonic remedies, and especially in dyspepsia, serous diarrhœa, maintained by the atony of the digestive organs. It is likewise successful in some cases of chronic inflammation of the mucous membrane of the intestines, produced by the debility of the tissues. It is daily administered in scrofulous affections, in some cases of gout, jaundice, caused by a state of debility of the biliary apparatus, in chlorosis, hysteria, &c. It is given alone or united with other tonic and astringent substances, in intermittent fevers, and it is said to have proved very efficacious. But it is far from presenting the same certainty of success as the Peruvian bark or its active principles.

D. & M. OF ADM. Powder, ℈j. to ʒss.——*Infusum gentianæ compositum*, E., U. S. (Gentian root, ℥ss.; orange peel, ʒj.; coriander (E. ʒj.) (U. S. ʒss.) Diluted alcohol, ℥iv.; water, Oj.—L. (Gentian root, orange peel, āā. ʒj.; fresh lemon peel, ʒij.; boiling water, f.℥xii.)—D. (Gentian root, ʒij.; fresh lemon peel, ℥ss.; orange peel, ʒiss.; proof spirit, f.℥iv.; boiling water, f.℥xij.) Dose, ℥j. to ℥ij. two or three times a day.——*Extractum gentianæ*, gr.xij. to xxx.——*Tinctura gentianæ*, P., PR., POL., B. (Gentiana, 5; alcohol, 24.) Dose from ʒj.

[illegible] principle of gentian.

[illegible] principle of an ex- [illegible] colour, inodorous, [illegible] acid; it is not [illegible] water; it dissolves [illegible] which weaken [illegible] Exposed to [illegible] Fahr. it is partly [illegible] yellow fumes which [illegible] the liquor; [illegible] the dregs with di- [illegible] the residue with [illegible] magnesia; boil the [illegible] dissolve again [illegible] and thus the gen-

[illegible] with ether; [illegible] repeatedly [illegible] again. Dilute [illegible] quantity of well washed [illegible] in a water-bath; finally [illegible] evaporate in a water-bath [illegible] in order to separate the magnesia [illegible] will be obtained in all its purity.

Th. E. According to Dr. Magendie's experiments, this principle is in no way venomous; it acts on the economy in the same manner as the substance which furnishes it; this action parts. It grows abundantly in Auvergne, in the Vosges, the Pyrenees, the Alps, and blossoms in May.

P. U. The root.

B. C. Root perpendicular, branched; stem erect, two or three feet high; leaves amplexicaule, oval, of a light green, five or seven nerved; flowers yellow, spicate; corolla regular, rosaceous; stamens alternate with the lobes of the corolla; anthers erect; two stigmas; no styles, ovary and capsule fusiform, unilocular; fruit flat, and membranous on the edges.

P. P. The gentian root is elongated, of the size of the finger, wrinkled, twisted, brown externally, of a lively yellow colour, and of a spongy texture internally, of a slightly nauseous smell, of a very bitter taste, but devoid of astringency.

C. P. According to Henry and Caventou, it contains a peculiar bitter principle, which they have called *Gentianine*, an oleo-resinous matter, very similar to bird-lime, a greenish oil, uncrystallizable sugar, some gum, a yellow colouring matter, and woody substance. Water, alcohol, and ether, dissolve the active parts of this root.

INCOMP. SUBST. Acetate of lead, sulphate of iron, &c.

TH. E. Gentian is, unquestionably, one of the most powerful, and most used of all the bitters contained in the materia medica. Like the preceding substance, it exercises upon the economy a tonic action merely. However, the volatile and odorous principle which the green plant contains, and of which but an inconsiderable quantity is to be found when desiccated, seem to act on the nervous system, and to cause, according to Planche, nausea, vomiting, and a pretty long inebriation. It is administered often and successfully in all cases requiring the exhibition of tonic remedies, and especially in dyspepsia, serous diarrhœa, maintained by the atony of the digestive organs. It is likewise successful in some cases of chronic inflammation of the mucous membrane of the intestines, produced by the debility of the tissues. It is daily administered in scrofulous affections, in some cases of gout, jaundice, caused by a state of debility of the biliary apparatus, in chlorosis, hysteria, &c. It is given alone or united with other tonic and astringent substances, in intermittent fevers, and it is said to have proved very efficacious. But it is far from presenting the same certainty of success as the Peruvian bark or its active principles.

D. & M. OF ADM. Powder, ℈j. to ʒss.——*Infusum gentianæ compositum*, E., U. S. (Gentian root, ℥ss.; orange peel, ʒj.; coriander (E. ʒj.) (U. S. ʒss.) Diluted alcohol, ℥iv.; water, Oj.—L. (Gentian root, orange peel, āā. ʒj.; fresh lemon peel, ʒij.; boiling water, f.℥xii.)—D. (Gentian root, ʒij.; fresh lemon peel, ℥ss.; orange peel, ʒjss.; proof spirit, f.℥iv.; boiling water, f.℥xij.) Dose, ℥j. to ℥ij. two or three times a day.——*Extractum gentianæ*, gr.xij. to xxx.——*Tinctura gentianæ*, P., PR., POL., B. (Gentiana, 5; alcohol, 24.) Dose from ʒj.

to ℥ij.——*Tinctura gentianæ composita*, L., D., U. S. (Gentian root, ℥ij.; orange peel, ℥j.; cardamon seeds, ℥ss.; diluted alcohol, Oij.)—E. (Gentian root, ℥ij.; orange peel, ℥j.; canella alba, ℥ss.; cochineal, ʒss.; proof spirit, Oijss.)——*Tinctura amara composita*, B. (The same as the preceding.)——*Tinctura amara*, Pr., Pol. (Gentian root, bitter oranges, flowers of small centaury, āā. 2 parts; zedoary, 1 part; alcohol, 36 parts.)—A. (Extracts of gentian and of wormwood, āā. 4 parts; tincture of orange peel, 8; carbonate of potassa, 1; cinnamon water, 96; alcohol, 24.) ʒj. to ij.——*Tinctura gentianæ ammoniacalis*, P.——*Elixirium ad scrophulas*. (Gentian root, 4; carbonate of ammonia, 1; alcohol, 125.—Peyrilhe's elixir differs from the preceding only in this particular, that the carbonate of ammonia is substituted by half its quantity of sub-carbonate of potassa.

Vinum gentianæ compositum, E., U. S. (Gentian root, ℥ss.; Peruvian bark, ℥j.; orange peel, ʒij.; canella alba, ʒj.; diluted alcohol, f.℥iv.; Spanish wine, Oijss.)—B. (Gentian, 16; orange peel, 12; black pepper, 1; ginger, 2; Spanish wine, 192.) Dose, ʒiv. to ℥j.——*Anti-scrofulous mixture*, Paris H. (Tincture of gentian, ℥j.; carbonate of ammonia or soda, ʒss.) Dose, ¼ or ⅓ of this quantity.

Several other species of gentian, such as *Gentiana purpurea* and *G. punctata*, Lin., possess likewise a great degree of bitterness, and are used in the north of Europe as substitutes for that which we have just described, and with which they are indeed very often mixed. The *Gentiana acaulis*, Lin., and several other small species growing on the Alps, contain, according to Messrs. Guillemin and Jacquemin, a much larger proportion of gentianine than the officinal gentian, and might be advantageously substituted for it; but their roots are so small that they are not thought worthy of being introduced into commerce.

Gentianine. *Gentianinum;* the active principle of gentian, discovered by Henry and Caventou.

P. P. Small needles of a yellow colour, inodorous, of an excessively bitter taste.

C. P. This substance is neither alkaline nor acid; it is not very soluble in cold, but more so in boiling water; it dissolves very readily in alcohol, ether, and in the acids, which weaken its colour, and render its bitterness more intense. Exposed to a temperature of about 350° Centig. (662° Fahr.) it is partly decomposed, and partly volatilized in fine yellow fumes, which condense under the form of small crystalline needles.

Prep. Treat the gentian root with ether; filter the liquor; evaporate the ether, and wash repeatedly the dregs with diluted alcohol; then evaporate again. Dilute the residue with water, add a small quantity of well washed magnesia; boil the whole, and evaporate in a water-bath; finally, dissolve again in ether, in order to separate the magnesia, and thus the gentianine will be obtained in all its purity.

Th. E. According to Dr. Magendie's experiments, this principle is in no way venomous; it acts on the economy in the same manner as the substance which furnishes it; this action, however, is more energetic. It may be used with advantage in the same cases as gentian.

D. & M. OF ADM. In substance, gr.ij. to iv. in pills. *Tincture*, F. M. (Gentianine, 0.25; alcohol, 32.) ʒi. to iv. *Syrup*, F. M. (Gentianine, 0.8; simple syrup, 500;) ℥j. to ij.

Family Gentianeæ.

AMERICAN COLUMBO. Wild Columbo. *Frasera Walteri*, Mich. *F. Caroliniensis*, Walter. A beautiful triennial plant, growing principally in the western parts of the United States, in dry and open woods.

P. U. The root.

B. C. Stem from 5 to 10 feet high, cylindrical, erect, smooth, with few branches except at the top, where they form a part of the pyramidal inflorescence; leaves all verticillate, sessile, entire, with a single nerve; flowers yellowish-white, numerous, large, forming an elegant pyramidal panicle, from one to five feet long; calix deeply 4-parted, spreading, nearly as long as the corolla, which is also 4-parted and spreading as the calix; segments oval, with a bearded orbicular gland in the middle of each; four stamina, with short subulated filaments; anthers oval-oblong; capsule, yellowish, compressed, partly marginated, one-celled, seeds from 8 to 12, imbricated, elliptic, with a membranaceous margin.

P. P. Root large and tuberous, of a yellow colour, of a sweetish bitter taste, imported in the market from Marietta, in the state of Ohio, in pieces resembling those of colombo in appearance, having a thick yellow bark, and a yellowish spongy wood.

TH. E. The root of the *Frasera Walteri* is a pure, powerful, and excellent bitter, destitute of aroma. It is said to be not inferior to gentian and columbo, and equal to any of the common tonic bitters used in medicine. In its recent state it seems to possess considerable emetic and cathartic powers. It is extensively used in the western states of N. America, and seems to support, generally, its reputation wherever it is resorted to. It is used as gentian or columbo in powder, decoction, infusion or tincture.

BLUE GENTIAN. *Gentiana Catesbæi*, Walter. *G. saponaria*, Willd. A perennial plant, growing principally in the southern states of North America, in open grassy swamps.

P. U. The root.

B. C. Stem terete, minutely pubescent, and somewhat scabrous; leaves short, elliptic-ovate, acute, margin scabrous; flowers terminal, fasciculate; corolla five-cleft, of a fine blue colour, campanulate, somewhat ventricose; segments subacute, interior plaits lacerately toothed.

P. P. Roots branching and fleshy; when dried, it has at first a mucilaginous and sweetish taste, which is soon followed by an intense bitter, very nearly approaching to that of officinal gentian.

C. P. According to Professor Bigelow, it contains an extractive bitter principle, soluble both in water and alcohol, resin, &c.

Th. E. The blue gentian is a tonic bitter, very little inferior to the *Gentiana lutea*. It is used in the southern states of America in complaints arising from indigestion and debility of the stomach. Its tincture is esteemed as a remedy in dyspepsia, given in doses of from ʒij. to ℥j.; it is said to increase appetite, and prevent the acidification of food.

Chiretta or Chiratta. *Gentiana Chirayta*, Roxburgh. *Henricea pharmacearcha*, Lemaire-lizancourt. A perennial plant, growing in Hindostan and Bengal.

P. U. The stem and root.

B. C. Stem woody, branched at top, from 2 to 5 feet high; leaves opposite; flowers yellow, terminal, in dichotomous or trichotomous panicles at the extremity of the branches.

P. P. Woody fragments, yellowish, of the size of a quill, offering a pretty large medullary canal, inodorous, and of an excessively bitter taste.

C. P. The substance contains, according to Boissel and Lassaigne, a resin, a bitter substance of a deep yellow colour, a yellow colouring matter, some gum, malic acid, salts of potassa of lime, and a small quantity of oxide of iron. Water and alcohol dissolve its active principles.

Th. E. The chiretta is very much employed in Hindostan as a tonic, in intermittent fevers, in atonic diseases of the digestive canal, in gout, &c. The English practitioners there consider it as possessing very decided tonic properties, and prescribe it in cases requiring the exhibition of corroborant remedies. It is but little used in Europe, on account of its scarcity.

D. & M. of Adm. *Powder*, gr.xij. to ℈j. *Decoction or infusion*, ʒss. to ℔j. of water.

Small Centaury. *Centaurii minoris summitates. Chironia centaurium*, Lamarck. *Erythræa centaurium*, Richard. Annual plant, indigenous to Europe, growing abundantly every where; it blossoms in the months of July and August.

P. U. The flowered tops.

B. C. Stem herbaceous, somewhat quadrangular, about a foot high; leaves oval, acute, sessile; flowers corymbose at the summit of the stem; calix cylindrical, 5.

parted; corolla infundibuliform with five deep divisions; anthers rolled in spirals; one bifurcate style furnished with two stigmas; ovary elongated, unilocular and polyspermous; fruit, a bivalve and unilocular capsule.

P. P. This plant is inodorous, and of a bitter taste when green, but still more intensely so when dry.

C. P. The flowered summits of the small centaury contain, according to Dr. Moretti, a free acid, a mucous substance, a bitter extractive matter, and several salts. Water and alcohol deprive them completely of their active principles.

Th. E. Small centaury is one of the most esteemed of the bitters indigenous to Europe. Its action upon the economy is very analagous to that of gentian, and of the other bitter vegetables. It is administered in all cases which require the employment of tonics; but it has been principally recommended in intermittent fevers, and indeed it succeeds perfectly well when these diseases are not very stubborn, as those which make their appearance in the spring; but it cannot be used as a substitute for the Peruvian bark in obstinate intermittent fevers, nor in those which take place during the fall, in certain localities. It is likewise administered in gout, chlorosis, and other diseases maintained by atony of the organs.

D. & M. of Adm. Powder, ʒss. to ʒj. Decuction or infusion, ʒiv. to vi to ℔ij. of water. *Distilled water* of small centaury, P. ℥j. to iv.——*Extr. centaurii minoris*, P., Pol., R., A., Den., Pr., B. ℈j. to ʒj.——*Essentia* sen *Tinct. centaurii minoris*, Den. (Small centaury, 1; alcohol, 4;) ʒj. to vj.

American Centaury. *Chironia angularis*, Willd. *Sabbatia angularis*, Adanson. An annual plant very nearly related to *Chironia centaurium*, and extensively distributed throughout the United States.

P. U. The whole plant.

B. C. Stem herbaceous, four-sided, with membranous wings at the angles, from one foot to eighteen inches high; leaves opposite, ovate, acute, closely sessile, or nearly amplexicaule, three-nerved; flowers numerous, terminal, from two to five at the extremities, of a beautiful rose-red colour above, much paler and nearly white underneath; in the centre of the corolla, there is a defined pentangular star of a rich yellow colour, bordered with green; corolla rotate, from five to twelve-parted; anthers at length revolute, of a rich yellow colour; capsule, one-celled, two-valved, many-seeded.

P. P. As all the *gentianeæ*, the whole plant is of an intense bitterness, which property is communicated both to alcohol and water; it is entirely devoid of astringency. The root is composed of yellowish, hard fibres, has a slight aromatic smell, and does not fatigue the digestive organs.

Th. E. This plant is a pure bitter, justly held in estimation as a valuable tonic and febrifuge. It has been generally administered in febrile diseases throughout the United States, and employed by the American practitioners in preference to the small centaury, and also much used in domestic practice as a prophylactic against autumnal fevers. It is used in strong infusion in large and repeated doses.

Family Aloideæ.

MEALY-STAR-WORT. STAR-GRASS. *Aletris farinosa*, Lin. A perennial plant, exclusively growing in North America, in dry and poor soils.

P. U. The root.

B. C. Stem from twelve to twenty-four inches, very simple and upright, nearly naked; leaves radical, disposed on the ground in a stellate rosette, lanceolate, mucronate and membranaceous; flowers covered with a whitish mealy substance, on a slender spike; perigone simple, corolliform, tubular, persistent, six-cleft; stamina six, inserted at the base of the segments; germ oblong; style triquetrous; capsule three-celled, many-seeded.

P. P. Root premorse, ramose, black outside, brown inside, intensely bitter.

C. P. It appears to be highly resinous, and contains extractive, but very little or no tannin or gallic acid.

TH. E. According to Professor Bigelow, no plant surpasses the *Alteris farinosa* in genuine, intense and permanent bitterness; neither aloes, gentian, nor quassia, exceeds it in the impression produced on the tongue. The root is highly valued as a tonic and stomachic in loss of appetite, weakness of the stomach, and indigestion; but it is said to produce nausea, when taken in large doses. In the southern states of America it has acquired a considerable repute as a remedy in dropsical affections.

MARSH-TREFOIL. BUCKBEAN. *Herba trifolii fibrini. Menyanthes trifoliata*, Lin. A perennial plant, common both to Europe and America, growing in marshy places, and flowering in April and May.

P. U. The stems and leaves.

B. C. Stem herbaceous, branched, horizontal, articulate, of the size of the finger, leaves composed of three oval leaflets, supported by a long petiole; flowers white; somewhat pink, in a short spike, carried on a common peduncle; calix persistent, 5-parted; corolla, monopetalous, borders ciliate; 3 stamens; 1 style; 2 stigmas; capsule ovoid, polyspermous, unilocular.

P. P. The stem and leaves of the fresh plant are of a deep green colour, smooth, of a faint, unpleasant odour, of a very bitter and slightly nauseous taste.

C. P. The expressed juice contains, according to M. Tromsdorff, a very bitter extractive substance, containing nitrogen, a brown gum, some inuline, a green fecula, some malate and acetate of potassa, and about seventy-five per cent. of its weight of water. The active principles are very soluble in water or alcohol.

Th. E. Marsh trefoil possesses energetic tonic properties, but if administered in too large doses it very often produces nausea, vomiting, colics, and alvine evacuations. This is an indication of its irritating effects on the stomach and intestinal canal. In moderate doses it is successfully exhibited in atonic affections of the digestive canal, in scurvy, chronic rheumatism, gout, &c. It is administered in diseases of the skin. It has been highly recommended as a febrifuge, but it does not possess more valuable properties in this respect than the other bitter substances. Finally, it is recommended as an emmenagogue, and succeeds in cases where the suppression of the menses is owing to atony of the organs.

D. & M. of Adm. In powder, (seldom,) ℈j. to ʒj. Decoction and infusion, ʒj. to ℔ij. of water. Expressed juice from the fresh plant, ℥j. to ℥iv.——*Extractum trifolii aquatici*, A., Pr., F., Pol., Dan., B., ℈j. to ʒj.

Family Synanthereæ.

Section Cynarocephalæ.

Burdock. *Bardanæ seu lappæ majoris radix. Arctium lappa*, Lin., an indigenous plant. It is biennial, very common in uncultivated ground, and amongst rubbish; it flowers in the summer.

P. U. The root, and sometimes the leaves. In England the seeds are likewise employed.

B. C. Stem branched, from four to six feet high, reddish; leaves cordiform, very large, tomentose, waved on the edges, and supported by a long canaliculate petiole, flowers violet, flosculous, all fertile, at the extremity of the branches; involucre roundish, formed of numerous small imbricated leaflets, hooked inside; fruit quadrilateral, supporting a sessile pappus.

P. P. The root of this plant is of the size of the finger, sometimes much larger, spongy, fusiform, blackish outwardly, white internally, inodorous, of a sweetish and slightly astringent taste; the seeds are aromatic, bitter and acrid.

C. P. The root contains a large quantity of inuline, (see page 121), a bitter extractive matter, some salts, with base of potassa. The leaves contain a good deal of sub-carbonate of potassa, some nitrate of potassa, and some other salts. Water dissolves its active principles.

Th. E. This substance, although it possesses a bitter taste, has but slight tonic properties. Nevertheless it seems to act as a tonic on the animal economy; but its effects are generally not very decided. However, it is commonly recommended as a diaphoretic and diuretic; indeed, when properly administered, it often acts in both these capacities. It is given in diseases of the skin, especially when this membrane is dry and rough. It is recommended in gouty, rheumatic, and syphilitic affections, without affording any certainty of success. Burdock seeds are used in England as a sudorific. The bruised leaves, applied to obstinate atonic ulcers, to crusta lactea, &c., excite the skin powerfully, and often produce good effects.

D. & M. of Adm. Powder, (seldom,) ℈j. to ʒss. Decoction, ℥j. to ij. to ℔ij. of water.

Holy Thistle. ***Cardui benedicti*** vel ***Sancti herba, Centaurea benedicta***, Lin. An annual plant, native of Europe.

P. U. The leaves and flowers.

B. C. Stem herbaceous, branched, quadrangular, reddish, hairy; leaves alternate, deeply and irregularly dentate, each tooth terminated by a prickle; flowers capitulate, solitary, terminal, yellow, containing from twenty to twenty-three hermaphrodite and fertile florets, except those of the disk; involucre, conical, and composed of imbricated scales; fruit smooth, supporting a double pappus.

P. P. This, almost inodorous plant, is intensely bitter, but its taste does not last.

C. P. It contains, according to Stallman, resinous chlorophyllive, 4.5; bitter principle, 15.5; gum, 8.3; and several salts with base of potassa and lime. Water and alcohol dissolve its active principles.

Incomp. Subst. Nitrate of silver and acetate of lead.

Th. E. The holy thistle is endowed with positive tonic properties; however, administered in large doses, especially in strong decoction, it produces vomiting, and it is frequently used in this manner to facilitate the action of emetics. It is most commonly employed as a gentle tonic in dyspepsia, chronic diarrhœa, and in atonic affections generally. It has frequently been administered as a febrifuge, and it is said to have been very successful. It has been recommended in arthritic affections, in some cases of pleurisy and chronic peripneumonia. Finally, anthelmintic properties have been ascribed to it, to which it has no particular claim.

D. & M. of Adm. Powder, ℈j. to ʒj. Infusion from ℥ss. to ℥ij. to ℔ij. of water. Decoction (seldom), from ℥ss. to ℥j., to ℔ij. of water, by small cupfuls. *Distilled water*, P. ℥j. to ℥ij. *Extract*, P.—*Extractum cardui benedicti*, Pr., R., F., Pol., Den., ʒss. to ʒj. *Wine*, (Holy thistle, ℥j.; red wine, ℔ij.) ℥j. to ℥ij.

The STAR THISTLE,	*Centaurea calcitrapa.*
GREATER CENTAURY,	*Centaurea centaurium.*
ST. BARNABY'S THISTLE,	*Centaurea jacea.*
CORN FLOWER,	*Centaurea cyanus.*
ST. MARY'S THISTLE,	*Carduus marianus*, &c.

Are now very seldom used.

Family Synanthereæ.

Section Corymbiferæ.

THOROUGH-WORT. BONESET. INDIAN-SAGE. *Eupatorium perfoliatum*, Lin. A perennial plant, indigenous to N. America, very common in meadows, damp woods, and on the margin of waters.

P. U. The whole plant, and especially the leaves.

B. C. Stems erect, from two to four feet high, very hairy and branched at top. Leaves perfoliate, broadest at their base, or point of union with the stem, tapering gradually in a long acumination, serrate, rugose, closely beset with gray hair, the upper pairs of leaves of the stem, and all those of the branches are there merely sessile. Flowers terminal, white, supported by short and hairy peduncles, in close fastigiate corymbs. Calix imbricate; florets from twelve to fourteen. Anthers deep blue or black. Seeds prismatic, attenuate at the base, and of a crow-black colour.

P. P. The whole plant is exceedingly bitter, and possesses but little smell.

C. P. According to Dr. Andrew Anderson, this plant contains a free acid, a small quantity of tannin, a bitter extractive matter, a gummy matter, resin, nitrogen, lime, probably in the state of acetate, gallic acid, a resiniform matter, soluble in water and alcohol, containing a bitter principle.

TH. E. This plant possesses active remedial properties, and it acts powerfully as a tonic, sudorific, and emetic, according to the doses in which it is administered. It has been exhibited with success in intermittent and other fevers, either in infusion, decoction, or in powder. The leaves are the part principally endowed with medicinal properties.

DOSES. Powder, from ten to twenty grains as a tonic or diaphoretic. Infusion, ʒij. to ℥ss. to a quart of boiling water, in doses of ℥ij. to ℥iv. every three or four hours.

ELECAMPANE. *Radix enulæ campanæ. Inula helenium*, Lin. A perennial plant, native of Europe, and now very common in America, growing in low meadows, and flowering in July and August.

P. U. The root.

B. C. Stem cylindrical, from four to six feet high, branched towards its summit, covered with a whitish down; radical leaves oval, acute, tomentose underneath, irregularly dentate and petiolate. The caulinary small, sessile, and almost round; flowers yellow, at the extremity of the branches. The florets of the circumference are female; involucre formed of imbricate leaflets; seeds elongate, cylindrical, surmounted by a silky and sessile pappus.

P. P. The elecampane root is large, tuberous, elongated, brown externally, white internally, of an aromatic smell, of a very bitter taste at first, and afterwards sharp and camphorated.

C. P. It contains 36.7 of a peculiar principle, discovered by Rose, and called *Inuline* by Thomson; this is white, pulverulent, soluble in boiling water, from which it precipitates on cooling, 0.3 of a concrete volatile oil, very analogous to camphor; 0.6 of wax; 1.7 of acrid resin; 36.7 of a bitter extractive matter; 4.5 of gum; and, finally, some lignous parts, albumen and salts, with a base of potassa, lime, and magnesia. Water and alcohol dissolve all its active principles.

Th. E. This plant is endowed with pretty energetic tonic properties, and it acts likewise as an excitant, on account of the camphorated volatile oil which it contains. It is recommended in indigestion, when it proceeds from debility of the organs, in some cases of humid cough, attended with great expectoration, but without fever or heat of the skin; in the last period of pulmonary catarrhs, when the irritation has subsided; in chronic catarrhs of the bladder and urinary passage; in serous and obstinate diarrhœa. Some ascribe to it diuretic and diaphoretic properties; and, indeed, given in a lukewarm infusion, in small and repeated doses, it may act in this way, and be serviceable in cases where it is necessary to promote perspiration and the urinary secretion, without, however, weakening the organs. It has been exhibited as an emmenagogue and an anthelmintic; but with respect to both these properties it has no more peculiar claim than any other bitter. It has been used with some advantage externally in psora.

D. & M. of Adm. Powder, ʒss. to j. Decoction or infusion, ℥ss. to j. to ℔ij. of water. *Compound decoction of elecampane*, Paris H. (Elecampane, ℥j.; hysop, and ground ivy, āā. ʒij.; water, ℔ij.; syrup of honey, ℥ij.; nitr. of potassa, ʒss.) Dose, from ℥j. to ij. every hour. *Compound elecampane mixture*, Paris H. (Decoction of elecampane, ℥iv.; tincture of digitalis, ʒss.; alcohol of potassa, gutt. xviij.; aperient syrup, ℥j.) By spoonfuls.——*Extractum helenii*, P., Pol., B., Pr., A. from ℈j. to ʒj.——*Tinctura enulæ*, P., A. ʒj. to ʒij.——*Vinum enulæ*, P. (Elecampane, ℥i.; red wine, ℔ij.) ℥ij. to ℥iv.

Coltsfoot. *Tussilaginis herba et flores. Tussilago farfara*, Lin. An indigenous plant, perennial; very common in clayey soils; flowering in the beginning of the spring; it has a bitter, mucilaginous savour. It is used as an infusion in the dose of a handful to two pints of water, in slight pulmonary catarrhs, and some other affections of a mild character. Its action, although very weak, can be referred to its tonic effects.

Family Synanthereæ.

Section Cichoraceæ

WILD SUCCORY. *Cichorii herba radix. Cichorium intybus*, Lin. A perennial plant growing abundantly on the road sides.

P. U. The leaves and roots.

B. C. Stem herbaceous, erect, branched; radical leaves, elongate, obtuse; flowers of a light blue colour, disposed in thin spikes; involucre double, the exterior one formed of five elongate leaflets, the interior, eight divided; fruit truncated, furnished with a fringed edge.

P. P. The root of this plant is oblong, of the size of the finger, fusiform, reddish externally, white internally, and inodorous. This part, as well as the leaves, have a bitter taste. The green plant furnishes a whitish, milky juice of a remarkable bitterness.

C. P. It seems to contain some nitrate and sulphate of potassa, a muriate and an extractive bitter principle.

INCOMP. SUBST. The infusion of gall-nuts, the salts of iron, of lead, &c.

TH. E. The wild succory has a tonic action, for which it is indebted to its bitterness. This action, although slow and weak, becomes evident after a certain time. It is daily employed in cases of debility of the gastric organs, and in many other affections requiring the use of corroborants. It has been for a long time considered as a solvent and aperient, and has been recommended as such in obstruction of the liver and abdominal viscera, in jaundice, diseases of the skin, &c.; but we know at present how to appreciate all those imaginary and wonderful properties. Finally, the root, desiccated and torrified, is a substitute for coffee, and has been for about twenty years considerably used in some parts of Europe.

D. & M. OF ADM. *The root*, in decoction, from ʒj. to ℥ij. to ℔ij. of water.—*The leaves*, in infusion, one or two handfuls to water ℔ij.—Clarified juice, P. Dose, from ℥ij. to ℥iv.—Extractum, P. Dose, gr.x. to xxx.——*Syrupus cichorii compositus, Syrup de chicoré composé*, P. (Wild succory root and rhubarb, āā. 12 parts; succory leaves, 18; fumitory and hartstongue, āā. 6; alkekengi berries, 4; yellow sanders and cinnamon, āā. 1; water, 812; sugar, 160.) Dose, from one to two ounces. This syrup is slightly purgative.——*Syrupus cichorii cum rheo*, A. (Wild succory leaves, 16; succory root, 48; carbonate of potassa, 1; rhubarb root, 64; sugar, 1152; water, 1536.) Same doses.

DANDELION. *Taraxaci herba et radix*, seu *Dens leonis*. *Leontodon taraxacum*, Lin. Perennial plant, growing abundantly in meadows and uncultivated grounds.

P. U. The leaves and roots.

B. C. Radical leaves, runcinate; scape one-flowered, erect, fistulous, weak; terminal flowers of a golden yellow; exterior involucre, spreading; the interior one erect; fruit, of a pale olive colour, ovoid, surmounted by a radiate pappus, supported by a thin stype.

P. P. Root fusiform, covered with a blackish epidermis; it contains an abundance of milky juice, inodorous, of a bitter, sweetish, and slightly acid taste. The leaves also are slightly lactescent, and of a pleasant bitterness.

C. P. This plant contains a good deal of extractive matter, a green resin, some fecula, a saccharine substance, some nitrate of potassa, lime, and acetate of lime.

INCOMP. SUBST. The same as for the wild succory.

TH. E. The properties and administration of the dandelion are the same as those of wild succory. This plant is frequently employed and recommended in chronic affections of the liver, jaundice, dropsy, and in diseases of the skin.

D. & M. OF ADM. *Roots*.. Decoction, ℥ss. to ij. to ℔ij. of water.—*Leaves*. Infusion or decoction, one or two handfuls to ℔j. of water. *Compound decoction of dandelion*, STOLL. (Roots of dandelion, succory, dog-grass, āā. ℥ijss.; water, ℔ij.; syrup, ℥ij.; sulphate of potassa, ʒij.; Hoffman's anodyne, gutt. xxv.) Dose, from ℥ij. to iv. two or three times a day. *Expressed juice from the fresh leaves*, P. ℥ij. to iv.——*Extractum taraxaci*, F., R., L., D. Gr.x. to ʒss.——*Extractum seu Mellago taraxaci*, PR., POL., DEN. Same doses.

Family Urticeæ.

HOPS. *Lupuli fructus* seu *Coni*. *Humulus lupulis*, Lin. A perennial indigenous plant, growing spontaneously in hedges, and cultivated on a large scale in several districts in England, in the north of France, in Flanders, and in the United States, &c.

P. U. The fruit and tops.

B. C. Stem herbaceous, angular, rough, climbing; leaves opposite, somewhat similar to those of the vine; flowers dioicous; the male situated in the axilla of the superior leaves, forming irregular groups; the female flowers constitute a kind of cone, formed of imbricated scales, at the base of which are two sessile flowers; fruit, cones membrauous, ovoid, elongate, two small seeds at the base of the scales.

P. P. This fruit is composed of foliaceous and persisting scales, and covered with small hair, charged with a kind of dust called *lupuline*; it is of a green yellow colour, possessing an aromatic bitter taste, which, when collected together in great quantity, becomes unpleasant and virulent.

C. P. Independently of lupuline, hops contain, according to Messrs. Payen and Chevallier, a volatile oil, a fatty matter, wax, some acetate of ammonia, malate of lime, tannin, gallic acid, a small quantity of osmazome. Boiling water, alcohol and ether dissolve the active principles of this plant.

INCOMP. SUBST. The mineral acids, salts of iron, of lead, of silver and mercury.

TH. E. The hop, on account of its bitterness, exercises a tonic action on the animal economy; but it seems to be endowed with narcotic properties besides, for which it is principally indebted to its odour, which is not perceived when administered in infusion, extract or tincture. It is employed successfully as a tonic, in order to aid the digestive functions in cases of atony of the gastric organs. It is daily administered in scrofulous affections, in obstructions, rachitis, and in cutaneous diseases, &c. It has been recommended as a febrifuge, but it seldom succeeds, except in cases of simple intermittent fevers, which disappear spontaneously after a few fits. Its lithontriptic properties are no better ascertained. It is well known that this article enters into the composition of beer.

D. & M. OF ADM. *Powder*, gr.xij. to ℈j. and above. Infusion and decoction, ℥ss. to j. to ℔ij. of water.——*Extractum humuli*, L., U. S. Gr.vj. to ℈j.——*Tinctura humuli*, L., E., (Hops, 5; alcohol, 32.) ʒss. to ij.—U. S. (Hops, ℥iv.; alcohol, Oj.

LUPULINE. *Lupulinum.* A peculiar substance, discovered by Dr. Ives of New York, which appears to be the active principle of hops.

P. P. Small shining grains of a yellowish white colour, containing a pulverulent matter of a golden yellow, of an aromatic smell, and very bitter taste.

C. P. According to Messrs. Payen and Chevallier's analysis, this substance is composed of resin, 105; bitter matter, 25; essential oil, 41; gum, and a small quantity of fatty matter and osmazone, some acetate of ammonia, silica, sulphur, oxide of iron and salts, with base of potassa and lime. It is soluble in water, alcohol and ether.

PREP. It is obtained by rubbing the cones of the hops on a sieve; the lupuline passes through, and is received on a piece of paper. It is purified by immersing it in water.

INCOMP. SUBST. The salts of iron, of mercury, of tin, and of platinum.

TH. E. It possesses the same properties as hops, but in a greater degree; in too large doses it produces a sensation of heat in the epigastric region, and in all the abdomen, some abdominal pains, costiveness, nausea, vomiting, thirst, and sometimes nervous phenomena, such as numbness of the limbs, heaviness in the head, melancholy; but it never produces cephalalgia or giddiness. It is exhibited in the same cases as hops; moreover, Dr. Freake has recommended it in the form of salve, in order to alleviate the pains caused by cancer in its last stage.

D. & M. of Adm. *Decoction* and *infusion*, from ℈j. to ʒj. to water, ℔ij.——*Lupuline powder*, F. M. (Lupuline, 1 part; sugar, 2 parts.) From gr.x. to ℈j., divided in two or three doses.——*Extract*, F. M. Dose, gr.vj. to xij.——*Tinctura of lupuline*, F. M. (Lupuline, 1 part; alcohol, 2 parts.) Dose, from gutt.xx. to xl.——*Syrup*, F. M. (Tincture of lupuline, 1 part; simple syrup, 2 parts.) Dose, ℥ss. to ℥j.——*Lupuline ointment*, Dr. Freake. (Lupuline, 1 part; axungia, 3 parts.)

Family Salicineæ.

White Willow. *Cortex salicis. Salix alba*, Lin. An indigenous tree, very common in damp places.

P. U. The bark.

B. C. Trunk 25 to 30 feet high, branched at top; leaves elongate, lanceolate, covered underneath with white silky hair; male flowers, two stamens; female flowers, ovary inferior; capsule elongate, fusiform, containing several pappose seeds.

P. P. The dry willow bark is rolled up, of various thickness, but generally rather thin, of a fallow brown colour, inodorous, of a very bitter and slightly astringent taste.

C. P. According to Pelletier and Caventou, this substance contains a reddish-brown colouring matter, soluble in alcohol, but almost insoluble in water; a green fatty matter, a tannin principle not precipitated by tartar emetic, differing, consequently, from that of cinchona; some gum, and lignous fibres. Water and alcohol dissolve its active principles.

Incomp. Subst. Gelatine, the carbonates of potassa and ammonia, lime-water, and sulphate of iron.

Th. E. The willow bark possesses very energetic tonic properties, associated with a slight degree of astringency. Its action upon the economy is very similar to that of the Peruvian bark, except that its febrifuge properties are not so well marked or so certain. However, when the price of Peruvian bark has been very high, it has been administered, and very often with success, in intermittent fevers. Its exhibition is very successful in dyspepsia, chronic hemorrhage, obstinate mucous discharges, and in every kind of atonic affections.

D. & M. of Adm. Powder, ʒj. to ʒiv. and above. Decoction, ʒij. to ℥j. to ℔ij. of water.——*Extractum corticis salicis*, A., Pr., gr.xij. to ℈ij.

Externally. Decoction, in lotions, fomentations, and gargles.

Family Polygoneæ.

Garden Patience, or Dock. *Patientiæ radix. Rumex patientia*, Lin. Perennial indigenous plant, growing abundantly in damp places, and flowering in the summer season.

P. U. The root, and occasionally the leaves.

B. C. Stem herbaceous, branched at top, four or five feet high, cylindrical and channelled; leaves elongate, saggittate, supported by long petioles; flowers greenish, in panicles at the top of the branches; calix turbinate, with six divisions; six stamens inserted in the calix; three stigmas; fruit triangular.

P. P. Root long, fibrous, fusiform, brownish externally, yellowish internally, almost inodorous, and of an acrid and bitter taste. The leaves possess a sub-acid taste.

C. P. This substance, of which no accurate analysis has yet been made, seems to contain sulphur in a free state, oxalate of lime, starch, and some extractive principles soluble in water.

Th. E. It is a weak tonic, possessing at the same time some diaphoretic properties, but which are probably owing merely to the circumstance of its being commonly administered in the form of warm decoction. This root is generally employed in the treatment of cutaneous diseases, and especially in psora. It is likewise successfully used in atonic diseases of the digestive canal. Given in too large doses, it produces alvine evacuations, and even nausea. The leaves are sometimes administered as anticorbutic; their action is analogous to that of the other species of rumex.

D. & M. of Adm. Decoction, ℥ss. to ℥j. to ℔ij. of water.——*Extractum*, P. ℈j. to ʒj. *Expressed juice of the leaves*, ℥j. to ℥ij.

Family Fumariaceæ.

Fumitory. *Fumariæ herba. Fumaria officinalis*, Lin. An annual indigenous plant, growing abundantly in cultivated fields and gardens.

P. U. The whole plant.

B. C. Stem herbaceous, branched, glaucous, square; leaves bipinnate and laciniated; flowers purplish, forming a sort of loose spike; calix small, composed of two oval leaflets; corolla, four unequal petals, the superior spurlike, the inferior free; fruit globular.

P. P. This plant contains a large quantity of aqueous, bitter, inodorous juice.

C. P. It contains malate of lime, and some bitter extractive principles. It is soluble in water, wine and alcohol.

Incomp. Subst. The salts of iron.

Th. E. It is a weak tonic, very much used in cutaneous diseases, in jaundice, obstructions of the abdominal viscera, scurvy, and in cases of debility of the digestive organs.

D. & M. of Adm. Decoction or *infusion*, one handful to ℔ij. of water. *Expressed juice*, ℥ij. two or three times a day. *Extract*, P., A., Pr., Pol., ʒj. to ʒij. *Syrup*, P. ℥ss. to ℥j.

Family Caryophylleæ.

Soapwort. *Saponariæ herba et radix*. *Saponaria officinalis*, Lin. A perennial indigenous plant. It grows spontaneously in cultivated fields, and flowers in June.

P. U. The flowered tops and roots.

B. C. Stem erect, branched, cylindrical, knotty; leaves smooth, sessile, oval; flowers of a pale rose colour, in terminal panicles; calix tubular, cylindrical, five parted; corolla, five petals with long claws; two styles; capsule unilocular, opening at top.

P. P. Root cylindrical and knotty, inodorous, possessing, together with the whole plant, an acrid, bitter taste.

C. P. This plant, according to Bucholz, contains resin, 0.25; a peculiar substance of a light brown colour, translucid, inodorous, soluble in water, insoluble in pure alcohol, and called *Saponine*, 34; extractive matter, 0.25; gum, 33; and water, 13. Water takes up saponine, and becomes frothy when agitated. It presents the physical properties of a solution of soap.

Th. E. Soapwort possesses weak tonic properties, and seems to act, at the same time, as a slight diaphoretic. M. Alibert has exhibited it with success in certain herpetic affections. It is often employed in jaundice, gout, rheumatism, constitutional syphilis, and in obstructions of the liver and abdominal viscera.

D. & M. of Adm. *Decoction*, ℥j. to ℔ij. of water. *Expressed juice* of the green plant, ℥ij. to ℥iv. *Extract*, P., ʒss. to ʒij.

Family Licheneæ.

Iceland Moss. *Musci islandici herba*. *Lichen islandicus*, Lin. *Physcia islandica*, De Cand. A plant growing abundantly in Iceland, and found on rocks in the Vosges, Alps, and Pyrenees.

P. U. The whole plant.

B. C. Foliaceous productions, dry, ascending, divided in branched and irregular slips, bordered with fine short hair, forming thick tufts; fructifications in purple scutcheons, situated obliquely upon the edge of the leaves.

P. P. Leaflets or slips irregular, dry, tough, almost of the consistence of cartilage, of a deep red colour at their base; of a yellowish gray, or whitish at the top, inodorous; of a bitter, mucilaginous taste, devoid of astringency.

C. P. This substance, according to Berzelius's analysis, contains bitter principle, 3; extractive colouring matter, 7; green wax, 1.6; syrup mixed with extractive, 3.6; fecula, 44.6; lignous fibres, 36.6; gum, 3.7; tartrate of potassa and lime, 1.9. Cold water takes up the bitter principle; warm water dissolves, besides the latter, all the fecula.

Th. E. Iceland moss, on account of its bitterness, acts as a tonic; the great quantity of fecula which it contains renders it also very nourishing. Deprived of its bitter principle, by repeated washings, or rather by maceration, in a weak alkaline lie, as Berzelius recommends, it is used as an aliment by the inhabitants of Iceland, and of some other parts of the north of Europe. It then acts as gum Arabic, and other mucilaginous substances, and it is very frequently administered in pulmonary catarrhs, in diarrhœa, and other affections requiring the exhibition of remedies of this kind. When the bitter principle is not separated from it, it occasionally succeeds in chronic diseases of the lungs, in obstinate and inflammatory diarrhœa, certain atonic dyspepsiæ, and, generally, in all cases where it is necessary to stimulate, in a slight degree, the digestive organs, and to promote, at the same time, the strength of the patient by tolerably abundant nourishment without fatiguing the stomach.

D. & M. of Adm. Powder, ℈j. to ʒj. in milk or broth. *Decoction*, ℥ss. to ℥j. to ℔ij. of water reduced to ℔j.——*Decoction lichenis*, L., E., D., U.S. (Lichen, ℥j.; water, Ojss.) ℥ss. to ij., alone or mixed with milk.——*Gelutina lichenis islandici*, P. (Lichen, 16; sugar, 34; isinglass, 1; water, a sufficient quantity.)—B. (Lichen, 3; sugar, 8; water, 48.)——*Mucilago lichenis islandici*, Pol. (Lichen 1; water, 20; reduce to 6.) ℥ss. to ij.——*Gelatina lichenis islandici cum cinchona*, P. (Lichen, 16; isinglass, 1; vinous syrup of bark, 40.) Dose ℥ss. to j.

The *Lichen pulmonarius*, *Lichen aphtosus*, and *Lichen Pyxidatus*, possess nearly the same properties as the *L. islandicus*, and were once employed to fulfil similar indications.

The Horse-chesnut Bark. *Cortex hippocastani*. *Æsculus hippocastanum*, Lin., of the family of the *hippocastaneæ*, is brown, very uneven externally, yellowish internally, inodorous, and of a bitter, astringent taste. Its composition, according to Pelletier and Caventou, is nearly the same as that of the white willow bark. It possesses very energetic, tonic and astringent powers, and may be beneficially used under several circumstances. Some have tried it as a substitute for Peruvian bark, in the treatment of intermittent fevers; but numerous experiments have proved that it cannot be employed with any advantage.

The fruit of this tree has a very bitter taste, of which it is deprived by means of maceration in a weak lie. It contains a great proportion of starch, and according to Canzoneri, a peculiar brown substance, of a sweetish taste, which he has called *Esculine.*

The horse-chesnut bark in powder is used in the dose of from ʒss. to j. or in decoction, ℥j. to ℔ij. of water.

COMMON HOLLY. *Ilex aquifolium,* Lin. A shrub of the family rhamneæ, a very common evergreen. The leaves are even, shining, of a lively green colour, and of a very bitter disagreeable taste. According to Lassaigne, they contain a bitter principle, uncrystallizable, decomposed by alcohol, a yellow colouring matter, some wax, gum, and several salts. This substance acts like the tonics. It is employed in the cure of intermittent fevers, and it has been recommended in some cases of gout and chronic rheumatism. It may be administered in powder, in the dose of ʒss. to j., and in decoction, from ℥ss. to j. Dr. L. Rousseau has given, with much effect, in intermittent fevers, the *wine of holly,* prepared by infusing, during twelve hours, one drachm of pulverized leaves of holly, in a tumbler of white wine; he exhibits this infusion two or three hours before the paroxysm.

The inside bark of holly is used for preparing bird-lime, which has been recommended as an emollient application on arthritic tumours.

The leaves of the OLIVE TREE, *Olea Europæa,* Lin., of the family *Jasmineæ,* possess a very bitter, harsh taste, and contain tannin and gallic acid. They are frequently used in the south of France in intermittent fevers. Several trials, which have been made at the Hospital de la Charité, induce us to believe that they are not without some beneficial action. They may be administered in powder or decoction during the apyrexia.

The green capsulæ of the COMMON LILAC, *Syringa vulgaris,* Lin., a shrub belonging to the same family, and very common in our gardens, are of an excessive bitterness, without any mixture of astringency. Professor Cruveilhier has employed them with great success as a substitute for Peruvian bark, in the treatment of intermittent fevers. They might likewise be used in decoction in cases requiring the use of tonics.

The root of the Bitter Polygala, *Polygala amara*, Lin., an indigenous plant belonging to the family *Polygaleæ*, and growing abundantly in uncultivated places, possesses a very great degree of bitterness. It acts as a tonic, but it very often produces alvine evacuations. It has been highly recommended in diseases of the lungs; but we may easily perceive that it must be more hurtful than beneficial in inflammatory cases. It is used as a tonic, in decoction, in the dose of ℥j. to ℔ij. of water, and in powder, ℈j. to ʒj.

Family Leguminosæ.

Wild Indigo. *Baptisia tinctoria*, Nuttall. *Podalyria tinctoria*, Lam. *Sophora tinctoria*, Lin. A perennial plant, native of America, growing in woods and poor soils.

P. U. The whole plant, and root principally.

B. C. Stems two or three feet high, very ramose; leaves ternate, folioles nearly sessile, obovate, smooth, of a bluish-green; flowers of a bright yellow colour, in small loose spikes at the end of the branches; calix bilabiate; pistil single and stipitate, succeeded by a swelled oblong pod, of a bluish-black colour.

P. P. Root woody and irregular, no smell, taste sub-acrid and nauseous.

Th. E. In large doses this plant has been found to act as a powerful emetic and cathartic; but a weak decoction of the root has frequently been given with the effect only of a gentle cathartic. A decoction of the bark of the root is said to have been made known by an empiric skilled in its use, as a remedy in scarlatina anginosa, and its employment has been extended, in a few instances, to typhus or putrid fever, with such good effect as to encourage further trials. An experienced physician considers it as an excellent antiseptic and febrifuge, preferring it in some fevers to Peruvian bark. As an external application its antiseptic qualities ought to be more extensively known. In the form of fomentation and cataplasm it has proved eminently beneficial when applied to phagedenic and gangrenous ulcers, especially when the decoction has been administered internally at the same time. A liniment, prepared by simmering the cortical part of the root in cream, has been found an efficacious application to sore nipples and ulcerated breasts.

Family Ranunculaceæ.

Gold Thread. *Coptis trifoliata*, Salisb. *Helleborus trifolius*, Lin. A small evergreen perennial plant, native of Siberia and the northern parts of North America.

P. U. The root.

B. C. Caudex, or base of the scapes and radical leaves covered with imbricate and yellowish scales; leaves evergreen, ternate, proceeding from the caudex; folioles rounded or obovate, with an acute base, and margin with unequal acuminate crenatures and lobes; flowers solitary, with a white corolliform calix of five or six deciduous sepals or folioles; corolla with as many nectariferous petals, shorter, obovate, hollow, yellow at the top; stamina many; pistils from five to eight; capsules the same number, umbellate, rostrate, unilocular, and many-seeded.

P. P. Root of a fine golden colour, intensely bitter, without smell or astringency.

Th. E. According to Dr. Thacher the root has long been a popular remedy in the New England States for aphthous affections of the mouth, and experience has evinced its beneficial effects; it is considerably used as a stomachic bitter in debility of the stomach and loss of appetite. According to Dr. Bigelow, this root is entitled to rank, as a pure tonic bitter, with most articles of this description, such as gentian, quassia, columbo, &c.

TONIC ANIMAL SUBSTANCE.

Extract of Ox Gall. *Extractum fellis borini.*

P. P. Soft substance, of a greenish yellow colour, of a very bitter, peculiar taste, attracting the moisture of the air.

C. P. Gall is composed of water, 700; resinous matter, 15; picromel, 69; yellow matter, 4; soda, 4,; and sundry salts. 7. The extract contains a much less proportion of water; it is almost entirely soluble in water and alcohol.

Prep. Evaporate ox gall slowly in a silver basin.

Th. E. This very bitter substance is endowed with most decided tonic properties. It has been successfully used for increasing the activity of the digestive organs, and in all the cases in which the exhibition of tonic remedies is indicated. It is now very much out of use.

D. & M. of Adm. In pills, ʒj. to ij. a day.——*Syrup.* (Extract of ox gall, alcohol and sugar, e. p.) ℥j. a day.

CHAPTER VI.

STIMULANTS OR EXCITANTS.

We apply the term stimulants to remedies, the immediate effect of which is to increase temporarily the energy of the vital functions. It is principally by the influence which they exercise on the circulation and animal heat, as well as by the rapidity and short duration of their effects, that stimulants differ from tonics.

The phenomena which substances endowed with this property produce on the animal economy, are of two kinds; one is produced by their local action on the digestive organs, and by the sympathetic effects resulting from it; the other depends on the absorption of their particles and on the influence which they exercise on all the organs. Indeed, as soon as a stimulant remedy comes in contact with the gastro-intestinal mucous membrane, it quickens the activity of the digestive organs, and produces a sensation of heat in the epigastric region. It is soon absorbed, and then the contractions of the heart become more frequent and strong; the pulse, consequently, is more rapid and energetic; respiration is quickened; the production of animal heat is increased; the capillary circulation becomes more active; the complexion enlivens, the eyes are more brilliant, the intellectual faculties more acute; muscular strength is augmented, and the movements are more easy and quick; the genital organs, the urinary and cutaneous secretions; in a word, the whole economy participates in the unusual activity which characterizes the stimulant medication, and this excitation may even be carried to such a degree as to induce symptoms of an inflammatory fever. The super excitation, caused by the action of these remedies, is frequently followed by more or less reduction of strength, which is in general greater in proportion as the stimulant substance has acted with more energy and promptitude.

In almost all the modern works on materia medica, their authors distinguish substances which excite the tissues in a very transient manner, and which react promptly on the brain, from the other [illegible] remedies. The former are called diffusible (*diffundere*, to diffuse, to scatter); but as these differences appear to be very often indeterminate, and, besides, as this division separates substances inducing very analogous effects, we have not thought proper to follow this arrangement.

Of the substances possessing in a greater or less degree the properties we have just enumerated, as belonging to stimulants in general, several seem to act, especially upon one or more organs; iodine, for instance, produces a disturbance of the whole economy, but it exercises its irritating influence especially upon the glandular system. These differences will enable us to establish, on this bases, some sub-divisions among stimulant remedies themselves.

Each of the three kingdoms of nature furnishes some of the stimulants. Most of the vegetable substances which are endowed with this property are generally remarkable for their strong and aromatic smell; they are indebted for their virtues to the presence of an essential oil, a resin, a balsam, benzoic acid, or camphor. The stimulating animal substances also very often possess a peculiar odour; as to the stimulants derived from minerals, they are in this respect distinguished by no property in particular.

All the essential or volatile oils are acrid, pungent, very odorous, and void of viscosity; their specific gravity is commonly less than that of water; they burn easily, and with a thick smoke. Water dissolves only a very small quantity, and becomes then an aromatic water. They are very soluble in alcohol. These solutions receive the name of spirits; they are decomposed by water, which gives them a milky appearance, by precipitating the essential oil. These oils are composed of carbon, of a large proportion of hydrogen, and perhaps some nitrogen. To the essential oils the plant called aromatic are indebted for their odour, and the hot and sharp taste which distinguishes them. They are produced by the secretion of numerous small glands existing in most of the organs of plants. They are generally obtained by distillation. Their action upon the economy is in general very energetic.

Resins, although differing very much from each other, are all solid, brittle, inodorous when they are pure; insipid or acrid; more or less transparent; a little heavier than water; most of them are soluble in alcohol, ether, fixed or volatile oils, alkalies, &c. Water has no action upon them, and it precipitates them from their solutions.

Gum-resins are not proximate principles; they are formed of gum, resin, an extractive matter, and an essential oil.

Their taste is acrid, and they possess a strong smell. They are partially soluble in water and alcohol. In whatever they vary in other respects, we shall indicate in the sequel of this work.

Balsams are also compound substances; on analysis, we find them to contain resin, benzoic acid, and often some essential oil. Heated, they are decomposed, and the benzoic acid partly volatilized. Water takes up a portion of this same principle. Finally, they are soluble in alcohol, ether, and volatile oils. We shall speak of benzoic acid and camphor more particularly hereafter.

From the remarks we have already made, it is evident that stimulating remedies are contra-indicated in cases of acute inflammation. The best results may, on the contrary, be expected from them in chronic phlegmasiæ, and in affections produced and maintained by atony of the organs, such as chronic catarrhs, passive hæmorrhage, gangrenous affections, adynamic fevers, scrofulous, and scorbutic diseases, &c. As to the medications which these substances are expected to fulfil, in relation to the speciality of action of several of them, they are so numerous and so different, that we must confine ourselves at present, to a general view of their action; but we shall enter more fully into this subject when we come to treat of each of the divisions we are going to establish respecting these substances.

DIFFUSIBLE OR GENERAL STIMULANTS.

We shall place under this head such of the stimulating remedies as do not appear to act, in a special manner, on a particular organ, but the exciting action of which is equally felt throughout the whole economy.

They are commonly exhibited in the same cases as tonics, to which they bear a great resemblance, and with which they are often combined.

GENERAL STIMULANTS OBTAINED FROM THE MINERAL KINGDOM.

HYDROCHLORATE OF AMMONIA. *Ammoniæ hydrochloras* vel *murias*. Sal ammoniac. It is found in nature, principally in the vicinity of volcanoes. Mount Etna furnishes this substance in considerable quantities.

P. P. It is found in commerce, in masses, concave on one side, and convex on the other, or in conical pieces, crystalline, white, inodorous, of a bitter, acrid taste. This salt is compressible and difficult to pulverize; when pure, it crystallizes in pectiniform needles; its specific gravity is 1.45.

C. P. It is composed of hydrochloric acid, 61.4, and ammonia, 38.6. It is unalterable in the air, soluble in three parts of cold, and in a less proportion of boiling water; it is entirely soluble in 4.5 of alcohol; its solution in water is attended with considerable reduction of temperature. Submitted to the action of caloric, it melts and volatilizes without decomposing, and when it is mixed, even in the solid and cold state, with an alkaline carbonate, it emits a very strong odour of ammonia.

Incomp. Subst. The oxides of the second class, the salts of lead and silver; the sulphuric and nitric acids, &c.

Prep. It is prepared on a large scale by treating carbonate of ammonia, obtained by the distillation of animal substances, with sulphate of lime, and by decomposing afterwards the sulphate of ammonia which takes place, by means of a solution of hydrochlorate of soda. The liquor is evaporated, and the very impure sal ammoniac thus obtained is purified by sublimation. In Egypt, it is obtained by distilling camels' dung.

Th. E. Applied externally, in large quantity, sal ammoniac produces, at first, a more or less lively irritation; it is then absorbed, and its action is felt by the stomach, which it irritates powerfully; and afterwards the nervous system feels the same impression. Taken internally, its action is the same, and it produces nausea, vomiting, and nervous symptoms, such as delirium, convulsive motions, &c. Administered in small doses, it acts as a stimulant upon the whole economy, and more especially upon the skin, of which it increases the secretion. It may be exhibited advantageously in cutaneous affections, rheumatism, anasarca, passive dropsies, &c. Combined with bark, it succeeds in the treatment of obstinate intermittent fevers. It is used externally, dissolved in water, as resolvent and refrigerant in superficial inflammations, in headache, &c. It is likewise very useful in certain indolent tumours, in gangrene, diseases of the skin, and as a gargle in chronic angina.

D. & M. of Adm. *Internally*, gr.vj. to viij. in pills, three or four times a day. As a *febrifuge*, ℈j. to ʒss. united with bark and the extract of gentian.——*Febrifuge boluses*, Paris H. (Peruvian bark, ʒv.; rhubarb, ʒss.; muriate of ammonia, gr.xxx.; syrup of peach flowers, a sufficient quantity, for ten boluses.) Dose, one every three hours. *Stimulating mixture*, Paris H. (Pulverized bark, ℥ss.; muriate of ammonia, gr.xij.; red wine, ℥vj.) for a dose.

Externally, in lotion, ℥ij. to vj. to ℔ij. of water. *Bath*, ℥viij. in a sufficient quantity of water. *Stimulating lotion*, Dr. Paris. (Muriate of ammonia, ʒij.; acetic acid, ℥ij.; camphorated alcohol, ℥ss.) *Resolvent lotion*, (Muriate of ammonia, alcohol, āā. ℥j.; water, ℥ix.) *Resolvent gargle*, Paris H. (Muriate of ammonia, ʒj.; vinegar, ʒij.; honey, ℥jss.; water, ℥xij.) *Resolvent poultice*, Paris H. (Muriate of ammonia, ʒss.; sub-acetate of lead, ℥j.; emollient poultice, ℥iv.)

Solution of Acetate of Ammonia. *Liquor ammoniæ acetatis. Spiritus Mindereri.* Acetate of ammonia exists in small quantities in corrupted urine, and, according to Chevallier, in some vegetables.

P. P. Colourless liquid, transparent, inodorous, of a sharp, cooling, then sweet taste. This salt, in the neutral state, does not crystallize; but in that of the bi-salt, it is susceptible of producing crystals of a pearl white colour, long, very thin, flattened, very deliquescent, and fusible at 77° Centig. (170½° Fahr.)

C. P. It is composed, according to Richter, of acetic acid, 65.77; ammonia, 31.23; it is very soluble in water and in alcohol; it is altered by the contact of the air and light; heated, it volatilizes entirely. By a proper evaporation, crystals of bi-acetate of ammonia may be obtained.

Prep. The spirit of Mindererus may be prepared directly by saturating water of ammonia with acetic acid; but most of the pharmacopœiæ direct that the sub-carbonate of ammonia be acted upon by acetic acid until it is perfectly saturated, which may be ascertained by means of litmus.

Incomp. Subst. The fixed alkalies, concentrated acids, corrosive sublimate, and nitrate of silver.

Th. E. Like all the ammoniacal compounds, the spirit of Mindererus exercises upon the animal economy a very powerful stimulating action, but which seems to influence more especially the skin and the urinary apparatus. It is consequently considered as a powerful diaphoretic. Its employment is recommended in certain cases of gout, in chronic rheumatism, in certain inveterate cutaneous affections, in cases of variola, varicella, scarlatina, and measles, when the eruption does not take place in a satisfactory manner, or has been suppressed by some accident. It is exhibited with success in dangerous typhoid fevers, which occur in camps, hospitals and prisons. Dr. Masuyer has used it advantageously in cases of intoxication, and in violent colic preceding and accompanying menstruation in certain females. Dr. Godard has obtained the greatest success in several cases of this nature.

D. & M. of Adm. As a stimulant and diaphoretic, ℥ss. to ℥ij. a day, in several ounces of any vehicle. As an emmenagogue, and in intoxication, gutt.xxx. to xl. in a glass of sweetened water.——*Acetas ammoniæ solutus dilutus*, A., P., F. (Liquid acetate of ammonia and distilled water, āā. e. p.) *Antiseptic mixture*, P. (Acetate of ammonia and syrup of bark, āā. 32; alcoholic tincture of bark, 8;

camphor, 0.6 ; infusion of valerian, 128.) Dose, from one to two table spoonfuls every hour. *Stimulating mixture*, Paris H. (Acetate of ammonia, ℥ij.; simple syrup, ℥j.; orange flower water, ʒiv.; infusion of linden tree flowers, ℥iv.) Dose, a table spoonful. *Diaphoretic mixture*, Dr. Paris. (Camphorated mixture, ℥jss.; acetate of ammonia, ℥ss. ; antimonial wine, gutt.xx.; tincture of opium, gutt. x.) To be taken in two doses. *Stimulating mixture* Dr. Paris. (Acetate of ammonia, ʒij.; decoction of bark, ʒx.; tincture of bark, ʒij.; aromatic confection, ʒss.) To be taken at once, and repeated every three or four hours.

Externally, in lotions ; in collyria and injections, diluted with rose water. *Refrigerant lotion*. (Acetate of ammonia, ℥vj.; spirit of rosemary, ℥ij.; water, ℔j.)

Sub-carbonate of Ammonia. *Ammoniæ sub-carbonas. Concrete volatile alkali. Volatile salt.* It does not exist in nature; but it forms spontaneously in the putrefaction of animal matter.

P. P. White masses, semitransparent, composed of a collection of small crystals resembling fern leaves, of a fibrous texture, of a sharp ammoniacal smell, of a caustic and urinous taste, of a specific gravity of 0.966. This salt effloresces in the air, volatilizes at a common temperature, and loses its ammoniacal smell.

C. P. The sub-carbonate of ammonia is composed of carbonic acid, 56.41 ; ammonia, 43.59 ; besides water in the proportion of one-eighth to one-twelfth ; it is soluble in two parts of water at 16° Centig. (61° Fahr.) still more so in this liquid at 40° Centig. (104° Fahr.) ; it is insoluble in alcohol. It volatilizes, and is partly decomposed by boiling water. Finally, it is endowed with alkaline properties, and turns the tincture of violets green.

Prep. It is obtained by heating in a retort one part of hydro-chlorate of ammonia with one and a half of carbonate of lime; it condenses in the receiver, which requires to be covered with wet rags.

Incomp. Subst. Acids, the oxides of the second class, the sulphates of magnesia, iron, and zinc; acetate of lead, corrosive sublimate, &c.

Th. E. This salt possesses the same properties as the liquid ammonia, but is less energetic. It is a very active stimulant, which, administered in too large doses, acts like irritating poisons, and inflames the digestive organs. In moderate doses it is useful in most cases mentioned under the head of Ammonia. English practitioners use it in the convulsions of children produced by dentition, and principally when acidity exists in the primæ viæ. Dr. Richoux has administered it with success in croup; he employs it likewise externally, under the same circumstances, to rubify the lateral parts of the neck ; it acts less powerfully than the aqua ammoniæ.

D. & M. OF ADM. *Internally*, in the dose of gr.vj. to gr.x., three or four times a day, in pills or in a mixture. *Ammoniacal syrup*, DR. RICHOUX. (Sub-carbonate of ammonia, ʒj.; syrup of althæa, ℥iij.) Dose, a spoonful every two or three hours. ——*Dr. Paris's stimulant mixture*. (Sub-carbonate of ammonia, ʒss.; syrup of orange peel, ℥ss.; mint water, ℥viij.) Dose, a spoonful every two hours.——*Dr. Paris's stimulant pills*. (Sub-carbonate of ammonia, aromatic confection, āā gr.v.; pulverized cantharides, gr.j.; simple syrup, a sufficient quantity to make a bolus.) Dose, one every six hours.——*Anti-acid pills*. (Sub-carbonate of ammonia, gr.v.; extract of rhubarb, gr.viij.;) for two pills.——*Aqua sub-carbonatis ammoniæ*, D., U. S. (Muriate of ammonia and carbonate of potassa, āā ℔j.; water, Oij.; distil to dryness in a glass retort.)——*Liquor sub-carbonatis ammoniæ*, L., E., POL. (Sub-carbonate of ammonia, one part; distilled water, two parts.) Dose, ʒss. to ʒj. in a bland fluid.

Externally, as rubefacient.——*Rubefacient salve*. (Sub-carbonate of ammonia, ʒj.; simple cerate, ℥ij.)——*Linimentum ammoniæ sub-carbonatis*, L. (Solution of sub-carbonate of ammonia, f.ʒj.; olive oil, f.℥iij.)

VOLATILE SALT OF HARTSHORN. *Sal volatile cornu cervi*, is nothing but the sub-carbonate of ammonia mixed with some foreign matter, especially with the empyreumatic oil of Dippel. It is now very seldom used.

VOLATILE SPIRIT OF HARTSHORN. *Spiritus volatilis cornu cervi, &c.*, is a solution of oily sub-carbonate of ammonia, produced by the distillation of hartshorn, silk, or any other animal matter.

It is seldom used, but when exhibited, it is in the dose of from 10 to 20 drops in a suitable menstruum. It enters into the composition of the *Ammoniacal alcoholate of lavender*, P. (volatile spirit of hartshorn, 32; essential oil of lavender, 1; alcohol, 4;) which is administered in the dose of from gutt.x. to xxx, in a suitable vehicle, in hysteria, spasms, &c.

ARSENITE OF POTASSA. *Potassæ arsenis*. It is always the product of art.

P. P. This salt is liquid, colourless, uncrystallizable, but producing by evaporation a very deliquescent viscous mass. Its taste is similar to that of the white oxide of arsenic; it is inodorous.

C. P. The arsenite of potassa is soluble in water; desiccated, and thrown upon burning coals, it decomposes; the arsenious acid is sublimed under the form of white fumes, of a garlic smell, and the potassa remains free. Heated with hydro-sulphuric acid, it produces, by means of a few drops of another acid, a yellow precipitate of sulphuret of arsenic. The salts of copper produce with it a green precipitate.

PREP. It is prepared by heating together one hundred parts of distilled water, one part of arsenious acid, and another of very pure sub-carbonate of potassa.

Incomp. Subst. Lime-water, hydro-sulphate of potassa, infusions or decoctions of barks.

Th. E. The action of this salt upon the animal economy is the same as that of the arsenious acid (see page 48); it is one of the most violent poisons; in very small doses it operates as a very energetic stimulant. Dr. Fowler was the first who introduced it into practice. It is exhibited with success in certain intermittent fevers, periodic headaches, some chronic affections of the viscera, when there is no acceleration in the circulation. Dr. Biett has used it at the Hospital St. Louis, in the treatment of certain obstinate cutaneous affections. It is, indeed, a very dangerous remedy, the administration of which requires much prudence and caution.

D. & M. of Adm. *Liquor arsenicalis*, L. *Solutio arsenicalis*, E. *Liquor arsenicalis Fowleri*, P. *Liquor potassæ arsenitis*, U. S. (White oxide of arsenic, and sub-carbonate of potassa, āā. gr.lxiv.; distilled water, one pint; alcohol, or compound spirit of lavender, f.ʒss.) This solution contains half a grain of white arsenic to the fluid drachm. Dose, from four to ten drops, and progressively to thirty, twice a day in a proper vehicle.——*Arsenis potassæ aquosus*, F. Same preparation as the preceding, with the omission of the alcoholic liquor. Same doses.

Bi-arseniate of Potassa. *Potassæ arsenias.* Neutral arsenical salt of Macquer. It does not exist in nature.

P. P. White crystals, transparent, in four-sided prisms, inodorous, of an acid taste.

C. P. This salt is very soluble in water; its watery solution reddens litmus. Heat transforms it into a neutral arseniate. Mixed with charcoal it decomposes at a high temperature, and the metallic arsenic sublimes. Acids and salts act on it nearly in the same way as on the arsenite.

Prep. It is obtained from a mixture of equal parts of white oxide of arsenic and nitrate of potassa, heated gradually to red heat. The residuum is dissolved in distilled water, and the liquor evaporated.

Incomp. Subst. The same as for the arsenite of potassa.

Th. E. Its action and employment are the same as the preceding.

D. & M. of Adm. Gr. one-sixteenth to one-eighth, in pills with crumb of bread. ——*Metallic febrifuge of mixture*, Paris H. (Arseniate of potassa, gr. one-fifth; mint water, ℥iij.; simple syrup, ℥ss.) By table spoonful during the apyrexia.

Arseniate of Soda. *Sodæ arsenias.* It does not exist in nature.

P. P. White transparent crystals, assuming the form of regular hexaedral prisms.

C. P. The arseniate of soda is very soluble in water, and acts with re-agents the same as the arseniate of potasssa.

Prep. Pour into a solution of arsenic acid a slight excess of soda or of carbonate of this base, and evaporate the liquor slowly.

Incomp. Subst. The same as for the preceding.

Th. E. It is exhibited for the same purposes as the arseniate of potassa. It is employed in England especially in intermittent fevers. Dr. Biett uses it frequently at the Hospital St. Louis, and prefers it to the arsenite of potassa, as being of a more easy administration. He employs it in squamous tetters, and in prurigo formicans.

D. & M. of Adm. Gr. one-sixteenth to one-eighth a day, in solution or in pills. ——*Pearson's solution*, Paris H. (Arseniate of soda, gr.iv.; distilled water, ℥iv.) Dose, ℈j. to ʒj. a day.

Arseniate of Ammonia. *Ammoniæ arsenias* does not differ from the two preceding arseniates with regard to its physical and chemical properties, and is prepared in the same way. Dr. Biett was the first who tried it in 1818; it has been since used in Germany in the same cases as the preceding, and principally in the humid squamous tetter *(Dartres squammeuses humides)*, when not accompanied with great inflammation. It does not seem to be so successful in the furfuraceous and lychenoid squamous tetters. A ***solution of arseniate of ammonia*** is prepared at the Hospital St. Louis (arseniate of ammonia, gr.viii.; distilled water, ℔ss.; spirit of angelica, ℥ss.; which is employed in the same doses as that of Pearson.

Proto-arseniate of Iron. *Ferri arsenias* is found in nature in the mines of Cornwall, but in very small quantities, under the form of small cubic crystals. This salt, almost insoluble in water, has been proposed as a remedy for cancerous diseases. Dr. Biett has exhibited it with advantage in corroding scrofulous tetters. He is in the habit of using the *pills of arseniate of iron*, Paris H. (arseniate of iron, gr.iij; extract of hops, ʒij.; pulverized althæa root, ʒss.; syrup of orange-flower water, q. s.) for 48 pills; of which one is given every day, and even two may be given after they have been used for some time.

We shall again repeat that all these arsenical preparations are very poisonous and dangerous, and that they must be administered with the greatest caution.

Nitric Acid. *Acidum nitricum* does not exist in nature, except in combination with potassa lime, and some other salifiable bases.

P. P. A transparent, colourless liquid, of a strong and disagreeable smell, of a very acid and caustic taste, producing, when exposed to the air, white and irritating vapours; specific gravity, 1.513.

C. P. It is composed of nitrogen 100, and oxygen 250, in volume. It has a great affinity for water, and cannot be obtained deprived of this liquid; in fact, it contains fifteen per cent. of it when it is concentrated in the highest degree; it attracts the moisture of the air; mixed with water it congeals at — 64° Centig. (— 83° Fahr.) in a thick mass. Heated, it boils at 86° Centig. (187° Fahr.); at a red heat, or mixed with charcoal, it decomposes and produces orange-red vapours. It rapidly disorganizes organic substances, and colours them yellow. It has a great affinity for salifiable bases, and put in contact with iron, zinc, tin, &c. it occasions a brisk effervescence, with a considerable disengagement of deep red vapours.

Prep. It is obtained on a large scale, by decomposing nitrate of potassa by sulphuric acid, in cast iron cylinders, with the assistance of heat, and is purified by the addition of some nitrate of barytes, and by distilling it slowly in a glass retort.

Incomp. Subst. Salifiable bases, carbonates, &c.

Th. E. Concentrated nitric acid is one of the most energetic caustics; it disorganizes instantaneously the parts which it touches; diluted with a large quantity of water, it acts only as a stimulant. Its action is very powerful; administered for a certain time, it produces all the symptoms of an inflammatory fever, of cough, spitting of blood, &c. It is exhibited with success, in the form of lemonade, in typhoid fevers, in chronic affections of the liver, in some cases of asthma, in certain kinds of dyspepsia, in scurvy, &c. This remedy has been highly recommended in England in the treatment of syphilis; but numerous experiments carefully performed, prove that it can in no way become a substitute for mercury: it has been found useful only during the course of mercurial treatment, in cases where the constitution was debilitated, in order to promote the general strength, and to counteract the bad effects of mercury. Externally, it is used as an excitant and astringent in cases of atonic ulcers, of spongy granulations, and in certain diseases of the skin. Concentrated, it is employed to cauterize warts, poisoned wounds, ulcers complicated with hospital gangrene, &c.

D. & M. of Adm. *Internally.* *Nitric lemonade*, ʒss. to ʒi. to a pint of water, or rather such a quantity as will produce a pleasant acidity.——*Acidum nitricum* *dilutum*, L. (Nitric acid, f.℥j.; distilled water, f.℥ix.) Dose, ♏.xv. to xxx. in four ounces of a vehicle.—E., D. (Nitric acid and distilled water, equal quantity by weight.) Dose, from ten to twenty drops.——*Spiritus ætheris nitrosi, Spiritus nitri dulcis*, L., U. S. (Alcohol, Oij.; nitric acid, ℥iij.; distil twenty-four fluid ounces.)—P. (Alcohol, ℔j.; nitric acid, ℔ss.; distil the liquor.)—E. (Alcohol, ℔iij.; nitrous acid, ℔j.; distil the liquor.)——*Spiritus nitrico-æthereus*, Pr., Pol., F., A. (Nitric acid, 12; alcohol, 48; calcined magnesia, or quick lime, 1.) Dose, gutt.xx. to xl. in any menstruum.

Externally. In lotions, baths, fomentations, ʒiv. to ʒvi. diluted with one pound of water.——*Unguentum acidi nitrosi*, E., U. S. (Hog's-lard, ℔j.; nitrious acid, f.ʒvi.)—D. (Olive oil, ℔j.; hog's-lard, ℥iv.; nitrous acid, f.℥j.)——*Unguentum nitricum, oxigenated ointment*, P. (Nitric acid, one part; axungia, eight parts.)—B. (Nitric acid, 1; axungia, 16.)

Sulphurous Acid. *Acidum sulphurosum.* Volatile vitriolic acid. It does not exist in nature, except in the proximity of volcanoes and in solfataras.

P. P. A colourless gas, of a strong, unpleasant, penetrating smell, very generally known, producing cough when it penetrates into the lungs, and of a specific gravity of 2.222.

C. P. This acid is composed of sulphur 100, and oxygen 99.44, according to Berzelius. Water at the temperature of 20° Centig. (68' Fahr.), and under the pressure of 76 centimeters, (about 30 English inches), dissolves 37 times its volume of it. A strong heat does not decompose it; it liquifies by the cold produced by a mixture of two of ice and one of sea salt, and a colourless liquid is thus obtained, of a specific gravity of 1.45, boiling at — 10° Centig. (+ 14° Fahr.) very volatile, and producing, by its very rapid evaporation, a cold sufficient to freeze mercury. Finally, it unites with most salifiable bases, and forms salts with them.

Prep. It is obtained by burning sulphur, in contact with the air, or else by decomposing, with the assistance of heat, sulphuric acid by a combustible substance, such as saw-dust, straw, &c. By receiving, in vases full of water, the gas resulting from this operation, the liquid sulphurous acid is obtained.

Th. E. Inhaled in large quantities, sulphurous acid gas, causes asphyxia and death; in small quantities, it powerfully irritates the windpipe, produces a violent cough, a contraction of the chest, and even spitting of blood. Applied to the skin, it causes a very lively excitation, which is soon propagated to the whole system, and increases the energy of the organs. Fumigations with sulphurous acid have been very successfully employed in most chronic diseases of the skin, especially in psora, in certain cases of rheumatic and arthritic pains, in scrofulous engorgements, &c. The sulphurous acid dissolved in water is used in lotions in several cutaneous diseases, and in the treatment of atonic ulcers.

M. OF ADM. The fumigating apparatus consists of a kind of box, constructed in such a manner as to let out the head of the patient, who is placed in it; but all the remainder of the body is inclosed in it. About half an ounce of sulphur is placed on a heated iron plate, and the vapour disengaged from it is made to enter the interior of the box.

HYDRO-CHLORIC ACID. *Acidum hydrochloricum.* Muriatic acid. Spirit of salt. It exists in nature only in combination with metallic oxides, and especially with soda. It is, however, found occasionally united with water, in the neighbourhood of volcanoes.

P. P. This acid, when pure, is a colourless gas, producing white fumes in the open air, of an acid taste, of a suffocating, peculiar smell, and of the specific gravity of 1,247. The hydro-chloric acid of the shops is a saturated solution of this gas in water. It is colourless or slightly yellow; its odour and savour are the same as those of the gaseous acid; it produces likewise white fumes in the atmosphere, and its specific gravity is 1.298.

C. P. The hydro-chloric acid gas is composed, in volume, of equal parts of hydrogen and chlorine at a temperature of 20° Centig. (68° Fahr.), and under the pressure of thirty inches, water dissolves 464 times its own volume of it. It is not decomposed by heat. Exposed to a cold of — 50° Centig. (— 58° Fahr.), and under a strong pressure, it becomes liquid. The aqueous solution heated, boils quickly, and permits a great part of the acid gas to disengage. It forms salts with all the salifiable bases.

INCOMP. SUBST. Nitrate of silver produces with it a white precipitate, insoluble in water.

PREP. It is obtained by the decomposition of sea-salt, by sulphuric acid, with the assistance of heat, and by receiving the gas resulting from this operation into water until complete saturation takes place.

TH. E. It possesses the same properties as nitric acid, but its unpleasant aftertaste renders it less suitable for internal use; however, in a very diluted state, it is exhibited in typhoid fevers, and in certain cutaneous affections. It is administered in aphthous and gangrenous ulcers of the throat. It is used externally in lotions, as a stimulant, in certain bad ulcers, in cutaneous diseases, and as an injection in chronic blennorrhagia.

D. & M. OF ADM. *Internally.* *Muriatic lemonade.* (ʒss. to ʒi. to ℔ij. of water.)——*Acidulated decoction of Barley.* (Hydro-chloric acid, ʒj.; decoction of barley, ℔j.; simple syrup, q. s.)——*Acidum muriaticum dilutum*, D. (Hydro-chloric acid and distilled water, āā. equal parts in weight.) ——*Alcoholized muriatic acid*, P. (Hydro-chloric acid, 1 part; alcohol, 3 parts.) Dose, ℈j. to ʒss. in a mixture.——*Muriatic oxymel.* (Hydro-chloric acid, 1 part; honey, 2 parts.) Dose, ʒj. to iv.

Externally. Lotions, ʒiv. to ℔j. of water.—Injections, gutt.viij. to x. in ℥iv. of water.—Gargles, ʒss. to ij. to ℥viij. of a vehicle.——*Muriatic gargle*, Paris H. (Hydro-chloric acid, gutt.xviij.; infusion of Peruvian bark, ℥iv.; syrup of honey, ℥j.)——*Detersive gargle*, Paris H. (Hydro-chloric acid, ʒij.; decoction of barley, ℔j.; honey of roses, ℥j.)——*Pediluvium.* (Muriatic acid, ℥j. to ℥ij. to a sufficient quantity of water.)

Chlorine. *Chlorina.* Oximuriatic acid. Oxigenated muriatic acid. It is found in nature only in combination with other substances.

P. P. Gas of a greenish-yellow colour, of an astringent, unpleasant taste, of a suffocating smell, and of a specific gravity of 2.4216. Liquid chlorine, and saturated solution of this gas in water, possess the same properties.

C. P. Chlorine is a simple body, soluble in one and a half its volume of water, at 20° Centig. (68° Fahr.), under a pressure of about thirty inches. It has a great affinity for hydrogen, which it attracts from most of the substances containing it. Caloric and light act upon liquid or simply moist chlorine, and form a hydro-chloric acid, by the almost instantaneous combination of this body with the hydrogen of the water. Dry chlorine may be liquified by a considerable degree of cold acting simultaneously with a very strong pressure; but if moist it congeals below 0° Centig. (32° Fahr.) This gas combines easily with most of the simple bodies and metals; with some, through the agency of heat, and with others while cold. These combinations form the chlorides. Finally, it destroys almost every vegetable colour, which property renders it useful in the art of bleaching.

Prep. This gas is produced by heating in a retort a mixture of four parts of common salt, one of peroxide of manganese, two of sulphuric acid, and two of water, and receiving the gas in water. Thus we obtain the liquid chlorine, which requires to be preserved in a place where light can have no access, and in well-stopped bottles.

Incomp. Subst. Nitrate of silver, gelatine, &c.

Th. E. Chlorine gas, if inhaled pure, causes sudden death; mixed with atmospheric air, it irritates violently the bronchiæ, produces cough, &c. Applied to the skin, by means of a peculiar apparatus proposed by Dr. W. Wallace, either pure, or mixed with steam, it possesses a very energetic stimulant action. Under the influence of this application, the skin, after a few minutes, becomes the seat of a very lively pricking, of prurigo, and of an abundant perspiration, which continues for some time after coming out of the bath; the body is afterwards covered with very small pustules, more or less confluent; and if the application of chlorine be continued for too long a time, it produces a violent pain, redness, and all the symptoms of erysipelas. As to its general action, Dr. Wallace thinks that it acts more especially on the liver, of which it increases the secretions. The concentrated liquid chlorine acts, internally as well as externally, in the same manner as the mineral acids; diluted with water, it acts only as an excitant, and may be used like hydro-chloric acid.

Chlorine gas is very little used except for destroying the putrid miasma, and for purifying the air in hospitals, gaols, ships, and wherever a number of persons are crowded together. However, Dr. Wallace, whom we have just mentioned, proposes the employment of baths of this gas in the treatment of all chronic affections of the liver, when there is no indication of inflammatory symptoms, and he asserts that he has obtained great advantages from them.

In the liquid and concentrated state, this remedy has been used very successfully by Dr. Alibert, in several herpetic eruptions. Diluted with water it has been administered in typhoid fevers, in scurvy, in several cutaneous phlegmasiæ complicated with ataxic symptoms, certain chronic diarrhœæ, in some diseases of the skin, &c. In the form of gargle, it has proved useful in angina maligna, in aphthæ, ulcerations of the throat, and, finally, according to Cluzel and Thénard, the immersion of the hands in this liquid, and lotions applied to the affected part, have been found a very successful and prompt remedy in the most stubborn psoric affections.

D. & M. OF ADM. *Internally.* Liquid chlorine, ʒj. to iv. in ℥viij. of a vehicle. Same doses employed as a gargle.

Externally. *Caustic and stimulant lotion*, ALIBERT. (Liquid chlorine, 2 parts; water, 1 part.) It is applied by means of the feather of a quill or a roll of lint. The part is washed afterwards with tepid water in the gaseous state.——*Guytonnian fumigations*, P. (Hydro-chlorate of soda, 7 parts; oxide of manganese, 1; water and sulphuric acid, āā. 4.)——*Baths of chlorine gas*, DR. W. WALLACE. (By introducing the gas in a fumigatory apparatus, in the form of a box, perfectly airtight, so as to prevent the patient from inhaling the gas.

CHLORIDE OF LIME. *Calcis oxi-murias.* Oxi-muriate of lime. Tennant's powder. This compound does not exist in nature; it is always the product of art.

P. P. Coarse powder, sometimes agglomerated, of a grayish white, of a sharp taste, and strong smell of chlorine.

C. P. This compound is partly soluble in water; the undissolved part, which precipitates, is a hydrate of lime. Exposed to the air it loses some of its chlorine. Caloric changes it into a chloride of calcium. Like chlorine, it has the property of destroying vegetable colours, and the acids disengage chlorine from it.

PREP. It is obtained by introducing a current of chlorine gas into an air-tight vessel containing some slacken-lime, and by continuing the operation until the lime ceases to absorb the chlorine.

Chloride of lime, like chlorine itself, has the remarkable property of decomposing putrid miasmata. M. Mazurier was the first who offered it as a means of disinfecting the encumbered rooms of hospitals; but to Labarraque we are indebted for the application, on a large scale, of this method to every branch of manufacture or other business in which animal matter, in a state of putrefaction, is used, and especially to the gut-spinning business. It is commonly used, at present, and with the greatest advantage, for washing dissecting rooms, putrified subjects which are to be opened, and to destroy the bad smell of privies. It has likewise been employed as a wash in sordid and offensive ulcers, and in wounds complicated with hospital gangrene; to large and superficial burns, when the inflammation has subsided; and, finally, we have used it with full success in cases of ulceration of the pituitary membrane, entertained by a necrosis of the bones of the roof of the mouth. With this substance we not only destroy the offensive breath of the patient, but we believe this remedy has even accelerated the separation of the part of the bone affected with necrosis, and the cicatrization of the ulcerations of the pituitary membrane and of the soft palate. Dr. Lisfranc employs it for subduing chilblains, whether in the state of ulceration or not, and has cured them by this means in a very short time.

Chloride of lime, in these cases, acts in two ways; by neutralizing the bad smell, and stimulating powerfully the parts to which it is applied. Thus it may be readily conceived that its employment may be advantageous under many circumstances.

D. & M. OF ADM. As disinfecting, applied to general uses. *Liquid chloride of lime.* (Chloride of lime, 1; water, 10.) For surgical uses, the above solution is diluted with four or five times its weight of water, and even more, according to the state of the parts to which it is to be applied. It is then used in lotions, fomentations, injections, gargles, &c.

CHLORIDE OF SODA. *Sodæ oxi-murias.* Labarraque's liquor. It is always the product of art.

P. P. Colourless liquid; sometimes of a light pink colour, diaphanous, soapy to the touch, with a slight odour of chlorine, and of a sharp and salt taste.

C. P. Exposed to the air and heat it emits a considerable quantity of chlorine; acids decompose it, and disengage chlorine; it forms a white precipitate with nitrate of silver, and when pure it is not rendered turbid by oxalate of ammonia. Like the preceding article it destroys vegetable colours.

Prep. M. Payen prepares it on a large scale, by treating the dry chlorate of lime with a strong solution of sub-carbonate of soda in very pure water. M. Labarraque obtains it by introducing a current of chlorine gas into a strong solution of subcarbonate of soda, marking 12° of the areometer, until a part of the liquid thus obtained discolours eighteen parts of sulphate of indigo.

Th. E. Chloride of soda possesses the same disinfecting properties as that of lime, and may be employed for the same purposes; but the chloride of lime is preferred to this article on account of its more moderate price; however, for surgical uses, that of soda is employed in preference.

Dr. Segalas' experiments prove that the chloride of soda, besides its powerful stimulating action upon the parts with which it comes in contact, is capable of exercising another very manifest one on the general economy, in consequence of its absorption. It then acts as an irritant, and may produce serious accidents; it requires, therefore, the greatest attention in its application upon the denuded tissues.

Properly diluted with water it is employed with great success in the treatment of obstinate and sordid atonic ulcers, of hospital gangrene, of degenerated syphilitic ulcers, of gangrene and gangrenous tumours, such as pustula maligna; of ulcerated cancers—those even of the womb, &c. In all these cases the offensive smell is instantaneously destroyed; and, besides, by the lively excitation which this remedy produces, it assists the cicatrizration of the ulcers. Finally, M. Labarraque used it once with success in a case of asphyxia, produced by the gas arising from privies, by placing in the nostrils and mouth of the patient a piece of linen soaked with concentrated chloride of soda.

D. & M. of Adm. In lotions, baths, fomentations, applications by means of lint, ℥j. of chloride of soda, diluted with, from two to nine ounces of water, according to the parts to which it is intended to be applied. As an injection in cancer of the uterus, ℥j. to ℔j. of water.

Chloride of Potassa. Javelle's water possesses almost the same properties, and may, in most cases, be a substitute for chloride of soda. But this very irritating liquid ought to be diluted with a considerable quantity of water.

ACIDULOUS OR GASEOUS MINERAL WATERS.

These waters are limpid and colourless; they have an acidulous and fresh taste; a sharp, but very weak smell. They redden the tincture of litmus, and form with lime-water a flaky precipitate. To the presence of carbonic acid they are indebted for most of their properties. They very often contain five or six times their volume of that gas; thus when they are agitated or heated, a great number of bubbles escape. Salts are also found in them, such as carbonates, hydro chlorates, and sulphates of lime; of soda and of magnesia, but in too small quantities to render them purgative; a certain number of these salts, insoluble in water, are kept in solution in them by carbonic acid; indeed, by the disengagement of this gas, these waters lose their transparency, and a whitish precipitate is formed, more or less abundant, of carbonate of lime, or of magnesia.

The springs of gaseous mineral waters are either cold or thermal. The former are cooling; they quench thirst, excite slightly the organs of digestion; increase, in a remarkable manner, the secretion of urine; but they re-act promptly on the brain. In fact, their use often causes giddiness, a slight inebriation, and even cephalalgia, agitation, syncope, &c. The thermal waters are more stimulating. It appears, therefore, that these mineral waters act on the digestive canal like refrigerants; but the influence they exercise on the nervous system is evidently of a stimulating nature.

The cold gaseous waters are exhibited with success in small quantities, as cooling drinks, in cases of slight inflammation of the digestive organs; in larger doses they succeed in a great number of chronic diseases, and especially in those proceeding from atony of the stomach. They are employed advantageously in nervous affections, hypochondriasis, chlorosis, amenorrhœa, calculous affections, chronic catarrhs, obstructions of the liver, &c. The thermal waters of this class are very useful, especially as baths, in diseases of the skin, rheumatic and arthritic affections, white swelling, and other diseases of this nature.

Some of the principal springs of acidulous or gaseous mineral waters in England and France are the following:—

Bath Thermal Waters. Bath is a very mild climate, and is the most generally frequented in England. This city is situated on the Banks of the Avon. There are four public baths.

The temperature of the water of Bath is the highest of all the springs in England, and is from 112° to 116°, Fahr.

According to Dr. Scudamore's and Mr. Garden's analysis of the King's Bath, a pint of this water contains the following solid and gaseous proportions:—

Muriate of lime, 1.2 grs.; muriate of magnesia, 1.6; sulphate of lime, 9.5; sulphate of soda, 0.9; oxide of iron, 0.01985; carbonic acid, 1.2 cubic inches.

These waters are taken internally or used for bathing;, and as to their efficacy in various infections, it is by some ascribed more to their high temperature than to their stimulating properties as chalybeates.

Buxton Thermal Waters. Buxton is a small town in Derbyshire. Its warm springs used for bathing, have given to it all its celebrity. The water issues through many fissures, and its temperature is 82° as it emerges from the earth; but in the basin the temperature is 77°. It is clear, colourless, inodorous, and tasteless, and does not become turbid by exposure to the air.

According to Dr. Scudamore, one gallon of water contains muriate of magnesia, 0.58 grs.; muriate of soda, 2.40; sulphate of lime, 0.60; carbonate of lime, 10.40; extractive matter and vegetable fibres, 0.50; loss, 0.52; carbonic acid gas, 1.50 cubic inches; and nitrogen, 4.64.

Bristol Hot Well. The temperature of this water is only 74° Fahr., although the name of this fountain would indicate a very high temperature. The water is clear, tepid, and very copious. When fresh drawn, it is inodorous, perfectly limpid, sparkling, rather agreeable, and without any decided taste. It is used only as a drink.

Dr. Carrick found this water to contain the following articles in one gallon: carbonate of lime, 13.5 grs.; sulphate of lime, 11.75; sulphate of soda, 11.25; muriate of soda, 4.00; muriate of magnesia, 7.25; and carbonic acid gas, 30 cubic inches.

Mont-D'Or, a village in the department of Puy-de-Dôme, near Clermont-Ferrand. There are four principal springs very near each other, viz. *St. Marguerite's* spring, the temperature of which, is from 10° to 12° (50° to 54° Fahr.); the *grand bain*, the waters of which, unctuous to the touch, and of a sweetish taste, have a temperature of 43°, (110° Fahr.) The *bain de César*, the temperature of which is 45°, (113° Fahr.); and, finally, the spring of *La Magdelaine*, the waters of which possess at first an acidulous and afterwards a salt taste, and a temperature of about 42°, (108° Fahr.) The waters of the *grand bain* contain, according to M. Bertrand, in 26 litres, carbonic acid, grs. 65; carbonate of soda, 200; carbonate of lime, 138; carbonate of magnesia, 47; muriate of soda, 147; sulphate of soda, 50; alumine, 39; silica, 30; oxide of iron, 4. The water of the other springs contain the same substances, but the proportions differ slightly.

Artificial water of Mont d'Or. TRYAIRE. Water charged with five times its volume of carbonic acid, ℥xx.; carbonate of soda, ℈ij.; hydrochlorate of soda, ℈j.; sulphate of iron, gr.j.

D. & M. OF ADM. As a drink, from two to five tumblers, in the morning, pure or mixed with milk or any other drink; and as baths, lotions, fomentations, shower baths, &c.

VICHY, a small town in the department of Allier, in a charming valley, possesses several mineral springs, the principal of which is called *grande grille*. Its temperature is of 38.5°, (102° Fahr.) Its waters are slightly turbid, of an acidulous and afterwards alkaline taste. According to M. Longchamps, 1000 grammes of this water contains, simple water, 992.552; free carbonic acid, 0.933; saturated carbonate of soda, 4.971; ditto of lime, 0.349; ditto of magnesia, 0.084; ditto of iron, 0.012; hydrochlorate of soda, 0.570; sulphate of soda, 0.472; silica, 0.073, and a small portion of vegeto-animal matter. Those of the other springs contain the same principles, and in very nearly the same proportions.

Vichy artificial water, P. Water containing twice its volume of carbonic acid, 650; sub-carbonate of soda, 1.6; muriate of soda, 0.2; sulphate of soda, 0.8; sub-carbonate of magnesia, 0.025; muriate of iron, 0.0125.

D. & M. OF ADM. As a drink, from two to five tumblers, pure or mixed with any other drink, every morning; in baths, mixed with one-half, or two-thirds of common water; lotions, fomentations, and shower-baths.

SELTZ or SELTERS, a small town in the department of Bas-Rhin, several leagues from Strasbourg, possesses a single cold spring, the medicinal water of which is composed, according to Bergmann, of carbonic acid, 60 cubic inches; muriate of soda, 109.5 grains; carbonate of magnesia, 29; ditto of lime, 17; ditto of soda, 24; in litres, 2.75 of water—about five pints of water.

Seltz artificial mineral water, P. Water charged with five times its volume of carbonic acid, 650; sub-carbonate of soda, 0.2; ditto magnesia, 0.1; muriate of soda, 1.2.

D. & M. OF ADM. As a drink, one or two litres a day, alone or mixed with wine, at meals; its use is now very common.

The other principal springs of acidulous waters in France are SAINT-MYON, PONGUES, CHATELDON, BAR, USSAT, &c.

GENERAL STIMULANTS FURNISHED BY THE VEGETABLE KINGDOM.

Family Laurineæ.

CINNAMON. *Cortex cinnamomi. Laurus cinnamomum*, Lin. A tree growing in the island of Ceylon, and different parts of the East Indies.

P. U. The bark deprived of its epidermis.

B. C. Trunk twenty-five to thirty feet high; bark grayish outside, red inside; leaves irregularly opposite, acute, tough, smooth, green on one side, and glaucous on the other; flowers yellowish, in a loose and axillary panicle; calix pubescent, with six divisions; male flowers, nine stamina, forming several rows; female flowers ovoid, terminated by a thick style; stigma capitulate; fruit ovoid, resembling an acorn.

P. P. We distinguish in commerce several species of cinnamon, the principal of which are:—

The *Ceylon cinnamon*, which is the most esteemed, is in extremely thin and light slips, curled the one over the other, so as to form small, narrow, long tubes. It is very brittle, of a fibrous texture, and of a reddish-yellow colour; its odour is very aromatic, its taste warm, pungent, and sweet; its after-taste is unpleasant. A variety of Ceylon cinnamon, inferior to that we have just spoken of, and called *common cinnamon*, is produced by the large branches and trunk of the cinnamon tree, whilst the former is exclusively furnished by the very young branches. It is in flat, thick, and large pieces, of a reddish-yellow colour, of a fibrous fracture, of an odour and taste similar to those of the best cinnamon, but rather weaker.

The *Cayenne cinnamon* is generally thicker than that of Ceylon, of which it has, however, the odour and taste; it differs from it only by being paler.

Finally, the *Chinese cinnamon*, which is of an inferior quality, is in shorter and thicker fragments, of a red-brown colour, of a smell smilar to that of bed-bugs, of a warm taste, leaving a bitter and disagreeable impression.

C. P. Cinnamon contains, according to Vauquelin, a very acrid and strong volatile oil of a yellow colour, and heavier than water; a great deal of tannin; a colouring matter containg nitrogen; an acid; a mucilage, and some fecula. In the Ceylon and Cayenne cinnamon, these proximate principles are found in very nearly the same proportions; but the Chinese contains a more considerable quantity of essential oil; water and alcohol take up the active principles of cinnamon.

Prep. To obtain the best cinnamon, the young branches of the cinnamon tree are cut down, the epidermis scraped off, then the bark is peeled off, cut in pieces, the smaller of which are inserted in the larger pieces, and thus they are spread out to dry in the sun. They procure the inferior quality by stripping the trees of their epidermis, removing the bark in slips, and drying it quickly in the sun. The trunk thus stripped perishes; it is cut down, and the root produces new shoots, fit in a few years to yield good bark. In general, the trees must be five years old to furnish the best cinnamon.

Th. E. Cinnamon is a powerful stimulant, which, in small doses, induces a sensation of heat in the epigastric region, and increases the digestive functions; it produces afterwards costiveness in a secondary manner, and acts as a stimulant on the whole economy, especially when exhibited in considerable quantities. This substance is seldom employed alone, but in conjunction with other tonic or stimulating substances; it may be prescribed with advantage in cases of atony of the stomach, of old diarrhœa, and likewise in the last period of adynamic and ataxic fevers. This substance has been recommended in cases of vomiting, which are not produced by an organic lesion of the stomach. Finally, it is frequently employed for concealing the odour or taste of other remedies.

D. & M. of Adm. Powder, gr.xii. to ℈j.——*Pulvis aromaticus*, E., U. S. (Cinnamon, lesser cardamom, ginger, āā. equal parts.)—D. (Same proportions with the addition of long pepper.)——*Pulvis cinnamomi compositus*, L. (Cinnamon, ℥ij.; cardamom, ʒjss.; ginger root, ʒj.; long pepper, ʒss.)—Pr., F. (Cinnamon, 2 parts; cardamom, ginger, and white pepper, āā. one part.)—P. (Cinnamon and cardamom, āā. four parts; ginger and cloves, āā. one part.) Dose, from eight to twenty grains.——*Electuarium aromaticum*, E. (Aromatic powder, 1 part; syrup of orange peel, 2 parts.)——*Confectio aromatica*, L. (Cinnamon, nutmeg[illegible], saffron, āā. ℥ij.; cloves, ℥j.; cardamom seed, ʒss.; prepared oyster shells, ℥xvj.; refined sugar, ℔ij.; water, Oj.)—D. (Very nearly the same ingredients and proportions.) D[illegible] from gr.xij. to ʒj.——*Infusion*, in close vessels, ʒss. to ℥ij. to two pound[illegible]—*Aqua cinnamomi.* Dose, from one to two ounces and more, i[illegible]—*Aqua cinnamomi vinosa*, Pol., Pr., F. (Cinnamon, 1 part; [illegible]ts; water, a sufficient quantity.)——*Aqua cinnamomi cum vin*[illegible] 2 parts; white wine, 2; wa[illegible] from ʒiv. to ℥j.

Tinctura cinnamomi, U. S. (Cinnamon, ℥iij.; diluted alcohol, Oijss.)—L., E. (Cinnamon, ℥ij.; (D. ℥lijss.) proof spirit, Oij.)—P., Pr., Pol., Den., F., A. (Cinnamon, 1 part; alcohol, from 4 to 6.) Dose, from ʒj. to ℥j. in a mixture.——*Tinctura cinnamomi composita*, L., D. (Cinnamon, ʒvj.; cardamom, ʒiij.; long pepper and ginger root, āā. ʒij.; proof spirit, Oij.)—E. (Cinnamon and cardamom seeds, āā. ℥j.; long pepper, ʒij.; proof spirit, ℔ijss.)——*Tinctura aromatica*, P. (Cinnamon, cloves, and nutmegs, āā. 4 parts; pomegranate tree flowers, 3; alcohol, 128.)—Pr., F., Den., Pol. (Cinnamon, 4; cardamom, cloves, galangal and ginger, āā. 1 part; alcohol, 48 parts.)

Syrupus cinnamomi, P. (Cinnamon water, 1 part; sugar, 2 parts.)—Pol., Pr. (Cinnamon bark and rose water, āā. 1 part; cinnamon water, 6 parts; sugar, 9 parts.) *Essential oil.* Dose, from one to six drops.——*Oleo-saccharum cinnamomi*, P. (Oil of cinnamon, gutt.ij.; sugar, ʒij.——*Elæo-saccharum cinnamomi*, A., Pr. (Oil of cinnamon, 5 parts; sugar, 20 parts.)

Cassia Lignea. Malabar Cinnamon. *Cassiæ ligneæ cortex* is furnished by the *Laurus cassia*, Lin.; a tree nearly related to the preceding. This bark is thick, in straight and cylindrical tubes, of a brown colour, of a taste similar to that of cinnamon, but fainter, viscous and slightly bitter; its odour is likewise less aromatic. It is employed in the same cases, but its action is much weaker.

Clove Bark or Culilawan Bark. *Cortex lauri culilaban* is furnished by a tree of the Molucca Islands. It is in pieces more or less long, almost flat, thick, fibrous, covered with a white epidermis; of a reddish-yellow inside; of a nutmeg and clove odour, and of an aromatic and sharp taste. It is another substitute for cinnamon, but not much used.

We find also in commerce, under the name of clove-bark, another bark furnished by the *Myrthus caryophillata*, Lin. It is in sticks two feet long, formed of several pieces of very thin, hard bark, rolled up one over the other; of a deep brown colour; of a taste similar to that of cloves. It possesses the same properties as the latter barks, and may be considered as a substitute for them.

The leaves of the Bay Tree, Apollo's Laurel. *Laurus nobilis*, a tree cultivated in Europe and America; have an aromatic smell, a bitter and sharp taste, and contains a very active brown volatile oil. The leaves are used principally for culinary purposes. A fatty, greenish oil, of the consistence of butter, is obtained from the fruit, and used occasionally in embrocations.

Family Meliaceæ.

Canella Alba. *False Winter's bark. Winteriana canella.* Lin. A tree growing in Jamaica.
bark.

B. C. Trunk from twenty to thirty feet high; leaves almost sessile, oval, of a light green, and shining; flowers in terminal clusters; calix concave, with three divisions; ten stamina; anthers elongate, with two contiguous cells; fruit, a globular berry, containing two or three seeds.

P. P. Thin bark, in scales five or six inches long, smooth, without epidermis, and curled up; externally of a slight reddish yellow colour; of a spongy texture; of a lighter and slightly grayish colour; internally, of a bitter and sharp taste, and of a very pleasant aromatic smell.

C. P. It contains a peculiar bitter matter, very soluble in alcohol and ether, but slightly so in water; a crystallizable saccharine principle; resin; a very acrid essential oil, gum, &c. It does not contain tannin as Winter's bark.

Th. E. Its action upon the economy is similar to that of the Ceylon cinnamon. It is principally used as a condiment, but it enters also into the composition of several pharmaceutical preparations. It has been administered in America with much effect in scorbutic diseases.

D. & M. of Adm. The same as those of cinnamon.

Family Euphorbiaceæ.

Cascarilla. *Cascarillæ cortex. Croton cascarilla,* Lin. (*C. Elutheriæ*, Edinburgh.) A shrub growing in Paraguay and Peru.

P. U. The bark.

B. C. Stem from five to six feet high, divided in numerous branches; leaves alternate, lanceolate, waved on their margin; flowers greenish, small, monoicous, disposed in spikes; calix double; male flowers, from twelve to fifteen stamina, five glands fixed in the centre; female flowers with a trilocular ovary; fruit three-celled.

P. P. Fragments more or less curled up, furnished with a whitish epidermis, covered with lichens; of a brown colour inside; of a close, smooth, and resinous fracture; of a slightly bitter, aromatic and acrid taste, and of a musk-like odour, especially when burning.

C. P. This bark contains, according to Tromsdorff, an extractive bitter matter, a very fragrant essential oil of a greenish colour, and a resinous substance. Water and alcohol dissolve only a part of its active principles.

Incomp. Subst. Lime-water, infusions of gall-nuts, sulphates of iron and zinc.

Th. E. Administered in small doses, cascarilla acts on the stomach in th[illegible]anner as tonics; in larger quantities its stimulating [illegible]ences all the economy, as is evinced by the diapho[illegible]leration of the pulse, &c. It is used with much success in cases of atony of the digestive canal, in dyspepsia, dysentery, and chronic diarrhœa. It has been highly recommended as a febrifuge; but it has been ascertained that alone it very often failed in the treatment of intermittent fevers. On the contrary, it succeeds well in conjunction with bark, and seems to render the action of this substance more certain and more prompt. Indeed, it is most commonly administered mixed in this way.

D. & M. OF ADM. *Powder*, from gr.x. to ʒss.—*Infusion*, from ʒij. to ℥j. to a pound of water.——*Infusum cascarillæ*, L., U. S. (Cascarilla, ℥j.; boiling water, Oss.) Dose, from ℥j. to ℥iij.——*Tinctura cascarillæ*, L., D., P., B. (Cascarilla, ℥ij.; alcohol, Oj.)—DEN., POL., F. (Cascarilla, 1 part; alcohol, 3 parts.)——*Tinctura crotonis elutheriæ*, E. (Cascarilla, ℥iv.; boiling water, ℔ijss.)——*Extractum cascarillæ*, D., PR., DEN., A., B., POL. Dose, from gr.xij. to ℈j.——*Distilled water of cascarilla*, P. From ʒij. to ℥ss. in a mixture.

Family Magnoliaceæ.

WINTER'S BARK. *Cortex Winteri. Drymis Winteri*, Lin. An evergreen tree which grows about the Strait of Magellan.

B. C. Stem from 10 to 40 feet high; leaves oval, scariose, green on the upper surface; whitish on the under surface; flowers small, three or four together at the extremity of the branches; calix with two or three deep divisions; corolla, six caducous petals; stamina numerous; anthers, with two separate cells, from four to eight ovaries changing to polyspermous berries.

P. P. This bark, which is often mistaken in commerce for *Canella alba*, is in fragments rolled up, about one foot long, one inch broad, and two or three lines thick, rugged, of a brown-yellow colour, and sometimes covered on the outside with tuberculæ, of a light yellow colour inside, of a compact and reddish fracture, of a resinous and aromatic smell, and of an acrid, burning taste.

C. P. It contains volatile oil, 1.2; resin, 10; tannin and colouring matter, 9; starch, 1.6; and saline substances. Water and alcohol take up its active principles.

TH. E. Winter's bark possesses very energetic stimulant properties, similar to those of the preceding substances; it is employed under the same circumstances. It has been highly recommended as a stomachic and anti-scorbutic, but it is now very little used.

D. & M. OF ADM. Powder, from gr.v. to ʒss.—Infusion, from ʒj. to ʒij. It enters the composition of several bitter and aromatic tinctures.

TULIP-TREE. White or American white poplar. *Liriodendron tulipifera*, Lin. A native tree of America, growing in almost all the extent of the United States.

P. U. The bark.

B. C. This beautiful and noble tree rises sometimes to the height of 140 feet; its trunk is straight, and its branches regularly disposed; leaves large, three-lobed, with the central lobe truncated; flowers large, solitary, terminal, sub-campanulate, variegated with yellow, orange, and lake-green colours; stamina about 36, disposed in a simple series; pistils numerous; germs disposed in the form of a cone; fruit conical, composed of numerous thin and imbricated scales.

P. P. Very bitter, slightly aromatic and astringent.

C. P. According to Dr. Roger's analysis this bark contains gum, resin, muriatic acid, iron, calcareous salt, mucus, fecula, &c.

Th. E. This bark possesses very eminent stimulant properties, but it is chiefly on account of its tonic effects that it deserves our particular notice. In combination with the *Prinos verticillatus* and *Cornus florida*, it has afforded a remedy of equal efficacy with Peruvian bark. In phthisis pulmonalis, attended with hectic fever, night sweats, and diarrhœa, it has frequently abated these alarming and troublesome symptoms, when administered in combination with laudanum. It has been used in cases of hysteria. It acts also occasionally as a diuretic, and, in general, it produces a very decided diaphoretic effect, when administered in large doses. The dose of this bark is from ʒss. to ʒij. in powder.

Badian or Star-aniseed. *Anisum stellatum. Illicium. anisatum*, Lin. A tree growing in China and Japan.

P. U. The fruit.

B. C. Leaves in bunches at the top of the branches, green, tough, persistent, and very similar to those of the common laurel; flowers solitary, in the axilla of the leaves, yellowish, very sweet scented; calix scaly; corolla formed of numerous petals, disposed in several rows, twenty-five to thirty stamina; fruit, eight monospermous cells united together by their base, and forming a kind of star.

P. P. Capsules compressed, ovoid, rugose, of a reddish-brown, of an acrid, aromatic and sweetish taste, of an odour similar to that of aniseed, and each containing a brown seed, shining, fleshy, and oleaginous.

Th. E. This substance has not been analyzed. It contains an abundance of volatile oil, to which it is indebted for its odour and taste. Its active principles are soluble in water and alcohol. The star aniseed, which is used to flavour cordials, possesses stimulant properties, and is employed in the same cases as most aromatic seeds, called carminative.

D. & M. of Adm. Powder, gr.xij. to ℈j. and more.—Infusion, ℥j. to ʒij. to ℔ij. of water.

Family Orchideæ.

VANILLA. *Vanillæ fructus. Epidendrum vanilla,* Lin. A sarmentose shrub, growing in Mexico and Peru.

P. U. The fruit.

B. C. Stem woody and climbing; leaves sessile, tough, fleshy, shining; flowers purple, large, four or five in a bunch; calix deciduous; anther terminal; fruit elongate, containing a fleshy pulp.

P. P. Pods bivalve, from eight to ten inches long, two or three lines broad, flat, tough, of a blackish-brown colour, and containing numerous round seeds of the same colour, surrounded with a black pulp of a sweet and aromatic odour, and of a very agreeable taste.

C. P. Vanilla contains a very active essential oil, some benzoic acid, and other principles. Water and alcohol dissolve the active parts.

TH. E. It is an active and very agreeable stimulant, and is commonly used to perfume chocolate. It seems to act in a decided manner on the organs of generation. It is employed as emmenagogue and aphrodisiac. It is useful in all cases requiring the employment of stimulants.

D. & M. OF ADM. *Powder*, from gr.xv. to ʒj. *Infusion*, from ℥j. to ij. to ℔ij. of water. *Syrup*, ALIBERT. (Vanilla, ℥ij.; white sugar, ℥xvii.; water, ℥ix.)

Family Myristiceæ.

NUTMEG. *Nux moschata. Myristica moschata,* Thunberg. A tree growing in the *Molucca Islands.*

P. U. The seed and its aril.

B. C. Trunk, thirty feet high, bushy. Leaves oval, lanceolate, entire, tough, of a deep green colour on the upper surface, whitish on the under surface. Flowers dioicous, from four to six united in the axilla of the leaves; male flowers, twelve stamina; female flowers, ovary ovoid, unilocular; fruit, a pyriform drupe containing an ovoid and hard seed.

P. P. Seeds oblong or oval, of the size of a small walnut, hard, unctuous, heavy, of a gray colour with red veins externally; reddish internally, with deeper veins; of a peculiar odour, very sweet and strong, of a warm, sharp, and very agreeable taste.

C. P. According to Bonastre, it contains stearine, 120; elaine, 38; a white volatile oil, lighter than water, of an acrid, sharp taste, 30; acid, 4; fecula and gum, 18; lignous fibres, 290. A fixed concrete oil, of a reddish-yellow colour is obtained from it by expression, containing a little essential oil, to which it is indebted for its odour, and which is improperly called in the shops *oil of mace*. Alcohol and ether dissolve its active principles.

Th. E. It is a very energetic stimulant, daily used for culinary purposes, and as a perfume. Given in large doses, this substance seems to act principally on the nervous system; in fact, it produces vertigoes, stupor, drowsiness, and general insensibility. In small doses, it is used with success in debility of the digestive functions, in certain diarrhœa, and, generally, whenever a strong excitation is necessary. Several practitioners employ it likewise externally in cases of palsy. Finally, it is often combined with bitter substances, in order to facilitate their action, and it enters into the composition of numerons officinal compounds.

D. & M. of Adm. *Powder*, gr.x. to ℈j.——*Spiritus myristicæ*, L., E. (Nutmeg, ℥ij.; alcohol, Cj.; water, q. s.) ʒss. to ʒj.; in a mixture. *Essential oil*, P., R. Dose, from gutt.ij. to iv. *Fixed oil*, P., Den., Pr., Pol., externally in frictions. *Nervine balsam*, P. (Fixed oil of nutmeg and beef marrow, āā. 32; essential oil of rosemary, Peruvian balsam, āā. 2; essential oil of cloves and camphor, āā. 1; alcohol, 4.) To use in frictions.

Mace. Aril of the fruit of the nutmeg tree, is a thick membrane, flexible, divided into narrow slips of a yellowish colour, of a smell analogous to that of nutmeg, of a warm, sharp, and at the same time fatty taste. It contains a good deal of essential oil, and some fixed oil; and although less active than the nutmeg, it is employed in the same cases, and manner. It enters also into the composition of many officinal preparations.

Family Myrtineæ.

Cloves. *Caryophylli. Caryophyllus aromaticus. Eugenia caryophyllata.* A shrub originally from the Molucca Islands.

P. U. The unexpanded flowers.

B. C. Leaves opposite, oboval, smooth, persistent. Flowers of a pink colour, forming a terminual trichotomous corymb; calix elongate, infundibuliform, with four teeth; four petals; ovary unilocular, monospermous fruit, a dry ovoid drupe.

P. P. Cloves have the form of a small nail with a round head; which circumstance has caused them to be called by the French, *cloux de gérofle;* they are of a light brown colour, of an acrid, sharp taste, of a strong, agreeable aromatic smell.

C. P. Cloves contain, according to Tromsdorff, a large proportion of essential oil, heavier than water and excessively acrid, some tannin and gum. Mr. Lodbert has discovered in it a peculiar resinous matter, crystallizable, white satin-like, rough to the touch, inodorous and insipid, which he has called *caryophylline*.

Incomp. Subst. Tartar emetic, sulphates of iron and zinc.

Th. E. This substance possesses in the highest degree the exciting properties of stimulants. It is daily used as a condiment. It is administered, in medicine, in the same cases as the preceding articles, and enters likewise into the composition of several officinal preparations. Its essential oil is used to cauterize the small nerves of decayed teeth; but, besides that, it often fails to fulfil this object, it may sometimes produce caries of the healthy teeth; its employment requires consequently great caution. This oil may be used likewise to rubify the skin.

D. & M. of Adm. Powder, gr.vj. to viij.——*Infusum caryophllorum*, L. (Cloves, ʒj.; boiling water, Oss.) Dose, from ℥j. to ℥ij. two or three times a day.——*Distilled water*, P. Dose, from ʒj. to ʒij. in a mixture.——*Tincture*, P. Dose, from ʒss. to ʒj.——*Oleum caryophyllorum volatile*, P., Pr., A., R., Pol., Den. Dose, gutt.ij. to iv., triturated with sugar.

Externally. In frictions, united with two parts of sweet oil.——*Emplastrum aromaticum*, Pr., Pol. (Cloves, 4; olibanum, 8; oil of nutmegs, 8; wax, 16; tallow, 12.)

Pimento, Jamaica Pepper or All-spice. *Pimentæ baccæ. Myrthus pimenta*, Lin. A tree native of South America, cultivated in Jamaica.

P. U. The fruit.

B. C. Trunk thirty feet high; leaves elliptical, entire, shining, and of a deep green colour; flowers in trichotomous panicles, of a light yellow colour; fruit, a globular berry, black, shining and bilocular.

P. P. Small globular berries, dry, wrinkled, of a dark colour, of an aromatic smell, similar to a mixture of cloves, cinnamon, and nutmeg, and of a sharp and warm taste.

C. P. This substance contains a volatile oil of a green-yellow colour; a resin, of a sharp and nauseous taste; some extractive; tannin, and gallic acid. Water, alcohol, and ether, dissolve its active principles.

Incomp. Subst. Sulphate of iron, nitrate of iron, infusion of bark.

Th. E. Pimento is an energetic stimulant, which is generally used as a condiment. It is frequently employed with success, united with bitter substances, in dyspepsia attended with flatulency, in arthritic, and old rheumatic affections. It is also exhibited advantageously in varioloid affections, measles, and malignant scarlatina, when the eruption is slow to appear, and when it is necessary to restore the strength of the patient. Finally, it may be substituted for other aromatic substances when their price is very high.

D. & M. OF ADM. Powder, gr.vj. to ℈j.——*Aqua pimentæ*, L., E., D. (Pimento, ℔ss.; water, as much as necessary to distil one gallon.) Dose, from ℥j. to ℥ij.——*Tinctura pimentæ acida*, B. (Alcohol, water, and sulphuric acid, āā. 5; pimento, 1.) Dose, from gutt.x. to xx. in a mixture.——*Oleum pimentæ*, L., E., D. Gutt.iij. to v., united with sugar or any proper vehicle.

Family Solanaceæ.

COCKSPUR PEPPER. CAYENNE PEPPER. *Capsici baccæ*. *Capsicum annuum*, Lin. Annual plant of the East and West Indies, and cultivated in Europe and North America.

B. C. Stem herbaceous and ramose; leaves lanceolate, entire, shining, supported by a long petiole: flowers white, small, axillary; fruit an elongated capsule, of a conic shape, shining, of a lively red, with two or three cells containing reniform, flat and yellowish seeds.

P. P. Capsule elongate, shining, red, wrinkled, containing a pulpous matter in which the seeds are lodged, of an aromatic smell, of an excessively acrid and warm taste.

C. P. Cayenne pepper contains a peculiar substance, discovered by Forchhammer, and called *Capsicin* by Dr. C. Conwell; a red colouring matter, a small quantity of a matter containing nitrogen, a mucilage and some salts, especially nitrate of potassa. Dr. C. obtains, by means of ether, a liquid of a fine reddish-yellow colour, which he calls ethereal oil of capsicum, and which is eminently endowed with all the stimulant and acrid properties of the Cayenne pepper.

INCOMP. SUBST. The infusion of gall-nut, alum, ammonia, alkaline carbonates, sulphates of iron, copper, zinc, &c.

TH. E. Like the preceding articles, this substance possesses very powerful stimulant properties. Introduced into the stomach, it produces a sensation of heat, which is very soon extended to the whole economy, without, however, accelerating the pulse in any sensible manner. It is little used in France, excepting as condiment; but the English and American practitioners administer it with success in atonic affections of the stomach, in gout, in certain cases of dropsy, and especially in angina and malignant scarlet fever. They give it then internally, and principally in the form of gargle; they often associate it with the martial preparations. Finally, they exhibit it also as a very active rubefacient in cases requiring this sort of medication.

D. & M. OF ADM. Powder, from gr.vj. to xij. in pills.——*Tinctura capsici*, L., U. S. (Cayenne pepper, ℥j.; diluted alcohol, 0ij. Dose, from ♏.xij. to f.ʒss.——*Stimulant gargle*. (Cayenne pepper, gr.vj.; boiling water, ℥iv.;—or tincture of Cayenne pepper, f.ʒij.; infusion of roses or any other vehicle, 0ss.)

Externally. *Tinctura capsici and cantharidum*, U. S. (Cantharides, ʒx.; Cayenne pepper, ʒj.; diluted alcohol, Oj.) To use as rubefacient.

Capsicine. According to Dr. Conwell, this substance, when perfectly pure, is tasteless, inodorous, and crystallizes in acicular fragments. After the first crystallization it yet possesses some taste of the red pepper, derived from the oil which it loses by repeated crystallizations. This substance is neither acid nor alkaline; it is insoluble in cold, but partially soluble in hot water. Oils, alcohol, and ether dissolve it; but these two last fluids take up a much larger quantity when they are hot. It is obtained conjointly with the ethereal oil.

Ethereal Oil of Capsicum. This oil possesses a most intolerable warmth and acrimony of taste, and concentrates all the stimulant properties of the pods. When applied to the skin of the hand its action is immediately felt, though it produces no redness. It is of a brilliant reddish-yellow colour, has a peculiar odour and aromatic taste, and cannot be distilled without undergoing decomposition. It is obtained by digesting, for two weeks, capsicum pods in sulphuric ether, filtering the ethereal tincture, and leaving it to a spontaneous evaporation. As the ether falls, crops of crystals of capsicine, assuming curious dendroid forms, will be seen studded round the inside of the vessel; and after all the ether is dissipated, the warm aromatic or concentrated oil of capsicum will be found at the bottom.

Family Piperineæ.

Black Pepper. *Fructus piperis nigri.* *Piper nigrum.* A shrub, native of the East Indies.

P. U. The fruit.

B. C. Stem lignous, sarmentose; leaves alternate, oval, smooth, five or six inches long, by two in breadth; flowers hermaphrodite, small, greenish, in extra-axillary aments, slender and pendulous, four or five inches long; fruit, a globular berry with a single seed.

P. P. Berries of the size and form of an English pea, blackish, very wrinkled, of a well known aromatic smell, and sharp taste.

C. P. Black pepper, according to Pelletier, contains a peculiar matter, discovered by Œrsted, and called *Piperine.* A very acrid concrete oil, a balsamic volatile oil, to which it is indebted for its savour, a gummous matter, extractive, malic and tartaric acids, starch, bassorin, lignin, and a very small quantity of salts. The active principles are soluble in ether and alcohol, and only partly so in water.

Incomp. Subst. The infusion of gall.

Th. E. This substance, applied in a large quantity to the living tissues, produces a violent irritation, rubefaction, and even inflammation, when the contact is too protracted. Absorbed and carried into the mass of the blood, pepper acts as a very energetic general excitant, the action of which lasts for some time. It is most commonly used for culinary purposes; however, its very stimulating action may be employed with advantage, and it may be administered in small doses alone, or combined with bitters, in cases of atony of the digestive organs, in arthritic affections, attended with dyspepsia, and in obstinate intermittent fevers, in conjunction with bark. In India, it is very often administered in infusion to arrest cholera morbus; and, according to Dr. Ainslie, its exhibition succeeds in stopping vomiting. Pepper is also employed as a gargle in relaxation of the soft palate. Finally, it may be substituted with advantage for mustard as a rubefacient, and even as an epispastic application.

D. & M. of Adm. Powder, from gr.iv. to ℈j. and more gradually, in pills; entire grains, No. ij. to iv.——*Vinous infusion.* (Black pepper, ʒj.; white wine, ℔j) Dose, three or four spoonfuls in the day.——*Rubefacient poultice*, P. (Pepper, fennel seed, āā. 16; torrefied and bruised barley, 128; white of eggs, q. s.; very strong vinegar, 32.)——*Unguentum piperis nigri*, D. (Pepper, ℥iv.; axungia, ℔j.)

White Pepper is nothing but the preceding article deprived, by maceration in water, of its black envelope.

Long Pepper, fruit of the *Piper longum*, Lin., is in spikes or catkins of the size of those of the birch-tree, dry, hard, heavy, tubercular, of a blackish-gray colour, of an odour less aromatic than that of black pepper, but of a burning taste. According to Dulong's experiments, it seems to be composed of the same principles as the latter substance. It is employed under the same circumstances, and in the same manner. It appears, however, to be less active.

Betel, fruit of the *Piper betel*, Lin., has a bitter, caustic taste, and an aromatic smell. It seems to possess the same properties as the preceding articles. Its leaves, united with the areca nut and quicklime, are used in the preparation of a masticatory of this name, which is of general use in India.

Piperine. *Piperinum.* A proximate principle, discovered by Œrsted, in the black pepper.

P. P. Four-sided prismatic crystals, colourless, translucid, inodorous, and almost insipid.

C. P. This substance is not alkaline, as was at first thought. Pelletier has ascertained it to have a resinous character; insoluble in cold, and but slightly so in boiling water; it dissolves perfectly in alcohol, boiling ether, and in acetic acid, from which it is precipitated by water. The concentrated mineral acids decompose it; sulphuric acid strikes with it a blood-red colour; nitric acid colours it greenish-yellow, which changes into an orange, and afterwards into a red colour; heated, it melts at a temperature of 100° Centig. (212° Fahr.), and above this heat it is decomposed, and gives all the products of vegetable substances.

Prep. By treating repeatedly the bruised pepper with alcohol, a resinous matter is obtained, which is subjected to the action of boiling water. Treat again with alcohol, and permit the solution to stand a few days; you will thus obtain crystals which may be purified by dissolving them again in alcohol or ether.

Dr. V. M. Meli performed, in the Hospital of Ravennes, a number of experiments on the action of piperine in the treatment of intermittent fevers. He asserts that he obtained the most happy results from its administration. These observations, repeated and confirmed by several other Italian physicians, prove that this substance is endowed with febrifuge properties similar to those of the alkali contained in Peruvian bark, if they are not even more energetic.

When piperine is entirely freed from the balsamic oil by repeated crystallizations, it is white, perfectly tasteless and inert. It is now ascertained that the properties of this article, as mentioned above, were altogether owing to the oil which was combined with it.

Cubebs. *Fructus piperis cubebæ. Piper cubebæ*, Lin. A shrub growing in the East Indies and in Africa.

P. U. The fruit.

B. C. Stem sarmentose, articulate; leaves petiolate, oval, tough; flowers, in elongate and pendulous spikes, furnished with a long pedicle; fruit, pisiform and blackish berries.

P. P. Berries blackish, wrinkled, larger than those of the black pepper, and furnished with pedicles; containing a yellow almond, hard, and covered with a brown epidermis; of an aromatic smell; of a warm, bitter, and sharp taste; however, not so strong as that of black pepper.

C. P. This substance contains, according to M. Vauquelin, an almost concrete volatile oil, a resin similar to that of the copaiba, which has a great analogy to piperine, another coloured resin; gum, an extractive principle, and some salts, especially, according to Tromsdorff, acetate of potassa.

Th. E. Cubebs have the same stimulant properties as the other substances of the same genus just investigated, but in a less degree. They seem to act in an especial manner on the mucous membranes, and especially on those of the genito-urinary organs. Indeed, they have been administered with success for several years past, in the treatment of acute and chronic inflammations of the urethra and vagina. Dr. Velpeau, in a memoir just published, recommends their administration as an enema, and he mentions, in support of this opinion, several instances of very successful cures. Dr. W. Chevallier has used them with success in chronic blennorrhœa, as an injection, made with a strong infusion of this substance.

D. & M. of Adm. Powder, ʒss. to ℥ss., two or three times a day, in syrup or mucilage of gum Arabic. In enema, ʒiv. to ℥j. and more, in ℥vi. of decoction of marsh mallow.——*Injection for blennorrhœa*, W. Chevallier. (Cubebs, ℥j.; extract of belladouna, ℈j.; water, ℔j.) a. q.

Family Urticeæ.

Contrayerva. *Contrayervæ radix. Dorstenia contrayerva*, Lin. Perennial plant, growing in Peru and Mexico.

P. U. The root.

B. C. Leaves all radical, petiolate, large, slightly rough to the touch; flowers monoicous, white, united and contained in a plane receptacle; male flowers, two stamina; female flowers, one, unilocular ovary; fruit, a small bivalve capsule, supported by a pedicle five or six inches long.

P. P. A knotty and ovoid root, about two inches long, of the size of the finger, terminated by a curved point, furnished with numerous hard radicles; externally of a reddish brown, and whitish internally; of an aromatic odour; its taste is at first weak, and afterwards warm, bitter, and acrid.

C. P. This substance has not been analyzed. Its remedial principles are soluble in water and alcohol.

Incomp. Subst. A copious precipitate is produced on adding water to its alcoholic tincture.

Th. E. This plant was once considered capable of neutralizing the poisons of animals and deleterious miasma, and was consequently administered in cases of the bite of serpents and other venomous animals, in the plague, putrid fevers, &c. Now we know that it possesses very energetic stimulant properties, that its action is felt by the skin, and that it increases its secretion. It may, consequently, be administered in all cases which require the exhibition of stimulants, and especially in atony of the digestive canal, in gout, obstinate diarrhœa, and in most affections complicated with adynamic symptoms. It is now very little used, and perhaps unjustly neglected, for its action is certainly very energetic.

D. & M. OF ADM. *Powder*, from ℈j. to ʒj.——*Infusion*, in close vessels, from ℥ij. to ℥iv. to ℔ij. of boiling water.——*Tincture*, P. ʒj. to ʒij. in a mixture.——*Pulvis contrayervæ compositus*, L. (Contrayerva, ℥v.; prepared oyster shells, ℔ss.) Dose, from gr.x. to xx.

Family Scitamineæ.

GINGER. *Gingiberis radix. Amomum zingiber.* A plant, originally from the East Indies, and imported into Mexico and the West Indies, where it is cultivated.

P. U. The root.

B. C. Stem cylindrical, leafy, about two feet high; leaves alternate, lanceolate, one inch wide by five or six long, terminated at the inferior part by a cleft sheath; flowers yellow, in an ovoid spike, supported on a scaly scape shooting from the side of the stem; anther cleft in two; style leaning in the furrow of the stamen; fruit, a smooth capsule containing several oblong seeds.

P. P. Tubercular root of the size of the finger, flat, knotty, and palmated-like, hard, compact, covered with a grayish epidermis, white or yellowish internally, of an acrid, warm taste, provoking the secretion of saliva, of a very strong smell, *sui generis*.

C. P. This substance contains, according to M. Morin, a resin soluble in ether, a sub-resin insoluble in that menstruum, a volatile oil of a greenish-blue colour, a matter containing nitrogen, another matter analogous to osmazome, acetic acid, acetate of potassa, starch, gum, lignous fibres, and salts. Water, alcohol, and ether, dissolve a part of its active principles.

TH. E. Ginger is an energetic stimulant like the substances mentioned above. It is generally used in India as a condiment. It is advantageously exhibited in dyspepsia, flatulent colics, and generally in all cases in which it is necessary to promote the action of the digestive apparatus. It is frequently used in England and America, and is commonly combined with bitters to assist their action. It may likewise be used as masticatory to promote salivation, and excite the mucous membrane of the mouth.

This substance enters into the composition of numerous remedial compounds, as an adjuvant or as a corrective.

D. & M. OF ADM. Powder, from gr.vj. to ℈j.—Decoction, ʒj. to ℥ss. to ℔ij. of water.——*Tinctura zingiberis*, L., E., D. (Ginger, ℥ij.; alcohol, Oij.) Dose, from ʒj. to ʒij.——*Syrupus zingiberis*, E., U. S. (Ginger, ℥iij.; boiling water, Oiv.; sugar, ℔vijss.)—L. (Ginger, ℥ij.; water, Oj.; sugar, ℔ij.)—D. (Ginger, ℥iv.; water, Oiij.; sugar, a sufficient quantity to make a syrup.

SMALL CARDAMOM. *Cardamomum minus. Amomum cardamomum*, Lin. *Matonia cardamomum*, Maton. A perennial plant growing in the East Indies.

P. U. The fruit.

B. C. Root stoloniferous, articulated; stem erect, from eight to ten feet high; leaves alternate, narrow, vaginant, one foot long; flowers, whitish, in irregular clusters, supported by a scape rising from the root; calix double, the internal one with three divisions; anther double; fruit a three-sided capsule, with three cells containing several angular seeds.

P. P. Triangular capsules, somewhat rounded, from four to five lines in length, of a yellowish-white, containing angular seeds of a brown colour, of a pleasant aromatic smell, of a warm pepper-like taste, weaker, however than that of the various peppers.

C. P. This substance has not been analyzed. We know only that it contains a great proportion of essential oil, to which it is indebted for its taste and odour; some fecula and mucilage. Water and alcohol both take up its active principles.

INCOMP. SUBST. Acids, sulphate of iron, and muriate of mercury.

TH. E. The stimulant properties of the small cardamom are less active than those of the black pepper. It is therefore preferred in those cases in which the too active influence of the latter might be hurtful, such as flatulent colics in children, in disturbed digestion in irritable persons, &c. This substance is very little used in France, although it enters into several officinal preparations; it is, on the contrary, very much employed in England. It is commonly combined with bitter tinctures and with purgative medicines to assist their action, and prevent the colics and flatulence which the latter are apt to produce.

D. & M. OF ADM. Powder, from gr.vj. to ℈j.——*Tinctura cardamomi*, L., E., D., U. S. (Cardamom seeds, ℥iv.; diluted alcohol, Oijss.——*Tinctura cardamomi composita*, L., D. (Cardamom, caraway seeds, āā. ʒij.; cinnamon bark, ʒss.; raisins, stoned, ℥iv.; proof spirit, Oij.) Both these tinctures are agreeable cordials, and are added to mixtures.

The **GREAT** and **MIDDLE CARDAMOMS**, furnished by other species of *amomum*, but as yet unobserved and undescribed, and which may be only varieties of the preceding, have a great resemblance to the small cardamom; they are, however, larger, and their properties are not so energetic.

MALEGUETTA. MANIGUETTA. GRAINS OF PARADISE. Fruit of a plant of the genus *Amomum*, which has not yet been described with accuracy. It resembles fenugreek seed; its taste is acrid and warm. It enters into several officinal preparations.

ROUND ZEDOARY. *Zedoariæ rotundæ radix*, is the root of the *Kæmpferia rotunda*, Lin. A plant growing in the East Indies. It is in fragments, of the size of the half or fourth of a small hen's egg, the convex side of which is marked with circular rings. It is of a grayish-white, compact, resembling horn inside, of a bitter, camphorated taste, and of an odour approaching that of ginger, from which it does not seem to differ in its chemical composition. The LONG ZEDOARY, *Amomum Zedoaria*, Willd., has the same properties, and differs from the round only in shape. Both these roots possess very energetic stimulant properties, but they are seldom used at present, except in the composition of several officinal preparations.

We may say the same of the GALANGAL, *Galangæ majoris and minoris radix*, furnished by the *Maranta galanga*, Lin., a plant very nearly allied to those just mentioned, growing in India and cultivated. This root is cylindrical, of the size of the little finger, five or six inches long, often bifurcate, of a brown colour externally, marked by circular white lines, of a yellow-red internally, of a strong, aromatic odour, and of an acrid, sharp taste. Its chemical composition is nearly the same as that of ginger. It is very much used as a condiment in India and China.

CURCUMA. TURMERIC. *Radix curcumæ*, is the root of the *Curcuma longa*, Lin., a plant, native of the East Indies. It is of the size of the finger, cylindrical, irregularly contorted, gray, and shagreen externally, compact internally, of a deep yellow colour, of a fracture similar to that of wax, of an odour and taste analogous to that of ginger. This substance contains an essential oil, a large quantity of yellow colouring matter, soluble in alcohol; it is used as a very delicate test for the presence of alkalies, by which it is changed to a deep red. Turmeric is scarcely used except for colouring certain pharmaceutical preparations. It possesses, however, very energetic properties, similar to those of the substances just described. It is used in India as a seasoning.

Family Aristolochiæ.

VIRGINIA SNAKE-ROOT. ***Radix serpentariæ Virginianæ. Aristolochia serpentaria,*** Lin. A perennial plant, growing in Carolina, Virginia, and most parts of the United States. It blossoms in June and July.

P. U. The root.

B. C. Root repent, ramose, stem from eight to ten inches high, slender, flexuose; leaves cordiform; flowers growing very near the root, solitary, small, of a deep red, six stamina soldered together with the style and stigma; ovary globular and hairy; fruit, a globular capsule with six saliant angles.

P. P. Root issuing from a common, slender, and elongated stalk, and consisting of long fibres matted together, ramose, of a brownish colour, of a strong, camphorated smell, and of a warm, bitter, sharp taste.

C. P. It contains, according to M. Chevallier's analysis, an essential oil, to which it is indebted for its odour; a bitter yellow matter soluble in water and alcohol, a resinous matter, gum, albumen, starch, salts of potassa and lime, a small quantity of iron and silica. Its active principles are soluble in water and alcohol.

Dr. C. Conwell has lately discovered in this root, a new alkali, which he has called *serpentaria.* It forms in a defined crystallized mass, of a bitter taste, and possesses all the alkaline properties. The *sulphate* crystallizes in quadrangular prisms, terminated in inclined facets. The *hydrochlorate of serpentaria* forms brilliant plumose fibrils. Both these salts are insoluble, except in an excess of acid. The preparation is the same as that by which quassia is obtained; but it requires rather more edulcoration.

INCOMP. SUBST. Acetate of lead.

TH. E. The Virginia snake-root possesses very powerful and lasting stimulant virtues; but, besides this general property, it must be observed that it acts also on the skin by stimulating this membrane and increasing perspiration. It has been highly recommended in the treatment of typhoid fevers of armies and prisons, and it has undoubtedly produced very good effects in many cases. It is administered with success in obstinate intermittent fevers, in gangrenous affections, chlorosis and atonic affections of the intestinal canal, and, generally, in all cases in which it becomes necessary to stimulate powerfully the organs, and to promote at the same time a slight diaphoresis. It is given administered in conjunction with the Peruvian bark, or other bitters. It is likewise occasionally associated with camphor.

D. & M. of Adm. Powder, gr.x. to xx., and gradually to ʒss. Infusion, ʒiv. to ℔j. of boiling water, of which one or two ounces are given every four hours.——*Tinctura serpentariæ*, U. S. (Serpentaria, ℥ij.; red saunders, ʒj.; diluted alcohol, Oij.)—L., D. (Serpentaria, ℥iij.; proof spirit, Oij.)—E. (Serpentaria, ℥ij.; cochineal, ʒj.; proof spirit, ℔ijss.) Dose, from ʒss. to ʒij.; and more in a mixture or a bitter drink.

Aristolochia Rotunda and **A. Longa**, Lin., are plants indigenous to Europe, of the same genus as the preceding, with tuberous, rounded, or elongated roots, of a grayish colour externally, yellowish internally, of a bitter, acrid taste, and of an unpleasant odour, possessing the same properties as the *Aristolochia serpentaria*, but in a less degree. They were formerly recommended as powerful emmenagogues; they are no longer used, and enter only into the composition of a few officinal preparations, which are very seldom prescribed.

Coffee. *Semen coffeæ*, *Coffea arabica*, Lin. A shrub, native of Arabia, and cultivated in the East and West Indies.

B. C. Stem from fifteen to twenty feet high; leaves persistent, green, shining, oval and elongated; flowers white, of a very fragrant smell, a number of them united together in the axilla of the leaves; calix adherent, with five divisions; corolla sub-infundibuliform; stamina jutting out from the corolla; style simple, crowned by a bifid stigma; fruit, a red berry similar to a cherry, with two cells, each containing a horny-like seed.

P. P. Seeds hard and horny-like, oval, convex on one side, flat on the other, having a longitudinal furrow, of a yellowish-gray colour, of a bitter, aromatic taste, of a very agreeable smell *sui generis*. Its properties vary slightly according to the different sorts found in commerce. The torrefaction to which coffee is subjected before being employed, gives it a light brown colour, and generates that perfume and exquisite taste which causes it to be so much sought for.

C. P. The untorrefied coffee contains, according to Messrs, Robiquet and Pelletier, some *coffeine*, a concrete essential oil, gum, albumen, a sweet, white oil, a bitter principle, and, finally, a very acrid oleo-resinous matter. Torrefaction generates some tannin, and an acid, called by M. Payssé, *coffeic (cafique)*, which some chemists consider as gallic acid.

Coffeine is a proximate principle, neither acid nor alkaline. It crystallizes in handsome white, silky needles. It dissolves in water, alcohol, and very imperfectly in ether; submitted to a gentle heat it melts, then volatilizes. It has not as yet been employed.

Th. E. The stimulating influence of the torrefied coffee, which is daily used in infusion, is very powerful. Every one knows that it possesses all the advantages of the alcoholic liquors, without producing inebriation, or the other consequences with which their use is attended. It promotes digestion, increases the frequency of the pulse, and revives the energy of the intellectual faculties. Its use is consequently recommended in chronic catarrhs, in asthma, amenorrhœa, gout, certain serous diarrhœa, maintained by atony of the membranes, in headaches proceeding from debility of the stomach, in intermittent fevers, &c. Finally, it is exhibited with great success in cases of poisoning by opium and other narcotics, to prevent somnolency and nervous symptoms.

The untorrefied coffee seems to possess very energetic tonic properties. Dr. Grindel has administered it with the greatest benefit in intermittent fevers, and he asserts, after a great number of experiments, that it can be substituted with advantage for bark in the treatment of these diseases, even of the most obstinate kind.

D. & M. of Adm. *Torrefied coffee*, ℥j. or more in ℥viij. of boiling water. *Untorrefied coffee.* Powder, ℈j. every hour during the apyrexia. *Decoction*, ℥j. in ℥xviij. of water, boiled down to xij.

Family Cruciferæ.

Horse-radish. *Raphani silvestris radix. Armoracia. Cochlearia armoracia*, Lin. A perennial indigenous plant, growing by the side of brooks, and cultivated in gardens.

B. C. Stem ramose, two or three feet high, smooth; radical leaves very large, elliptical, petiolate, the caulinary smaller, narrow and lanceolate; flowers white, small, in long spikes at the extremity of the branches; calix, four concave divisions; petals spreading; fruit, small ovoid silicles, crowned by a persistent stigma, and composed of two cells containing five or six seeds.

P. P. Root cylindrical, one or two feet long, sometimes of the size of the arm, white and fibrous internally, yellow externally, of a very penetrating smell when bruised; entire; it is inodorous. It loses its virtue by desiccation.

C. P. The horse-radish, as well as a great many plants of this family, contains a very acrid volatile principle of an oily character, which seems to contain sulphur; fecula and albumen are likewise found in it. Its active principles are soluble in water, wine, and alcohol.

Incomp. Subst. Alkaline carbonates, muriate of mercury, nitrate of silver, the infusions of Peruvian bark and galls.

Th. E. This plant, which is frequently used in Europe, possesses very powerful stimulant properties. Applied to the skin it produces rubefaction, pain, and all the symptoms of inflammation. Cautiously administered internally it acts by exciting powerfully the organs, and especially the stomach; but this action is of short duration. It is principally in scorbutic affections that the horse-radish is exhibited, and the advantages derived from it's administration have caused it to be placed at the head of the plants called *anti-scorbutic*. It may likewise be employed in cases where a lively and powerful excitation is required, such as in certain chronic catarrhs, scrofulous affections, chronic rheumatisms, certain dropsies, and chronic diseases of the skin. It may be used externally as a rubefacient, instead of mustard.

D. & M. of Adm. Infusion, from ℥ss. to ℥j. to two pints of water.——*Infusum armoraciæ*, U. S. (Horse radish and mustard seed, āā. ℥j.; boiling water, Oj.) ——*Infusum armoraciæ compositum*, L. (The same, with the addition of compound tincture of horse-radish, ℥j.)—P. (Horse-radish, burdock, dock-root, cochlearia, water-cress, and buckbean, āā. 1 part; boiling water, 64.) Dose, a small cupful.——*Stimulant mixture*, Dr. Paris. (Horse-radish, mustard, āā. ℥ss.; boiling water, Oj.; aromatic spirit of ammonia, ʒij.; tincture of Cayenne pepper, ℥j.) Dose, one table-spoonful three times a day.——*Spiritus armoraciæ compositus*, L. (Fresh horse-radish, orange peel, āā. ℔j.; nutmeg, ℥ss.; proof spirit, Cj.; water, sufficient quantity to distil one gallon.)—D. (Horse-radish and orange peels, āā. ℔ij.; fresh scurvy grass, ℔iv.; nutmeg, ℥j.; proof spirit, Cij.;) to distil two gallons. Dose, from one drachm to four in a suitable vehicle.——*Spiritus anti-scorbuticus*, P. (Horse-radish, 16 parts; cochlearia, 125; alcohol, 150.) Same dose.——*Vinum anti-scorbuticum*, P. (Horse-radish, 4; cochlearia, water-cress, mustard, buckbean, āā. 2; muriate of ammonia, 1; white wine, 125; spirit of cochlearia, 2.) Dose, from ʒss. to ℥ss.——*Syrupus anti-scorbuticus*, P. (Horse-radish, cochlearia, buckbean, water-cress, and bitter oranges, āā. 32; cinnamon, 3; white wine and sugar, āā. 128.) Dose, from ʒij. to ℥ij.——*Anti-scorbutic gargle*, Paris H. (Bitter infusion, ℥iv.; anti-scorbutic spirit, ℥ss.; honey of roses, ℥ij.)

Cochlearia. Scurvy Grass. *Cochleariæ officinalis herba. Cochlearia officinalis*, Lin, A biennial indigenous plant, growing spontaneously on the sea shore, and cultivated in gardens.

P. U. The whole plant in a green state.

B. C. Stem herbaceous, ramose, from seven to ten inches high; leaves alternate, numerous, concave, rounded, smooth, green, and shining; flowers white, forming a kind of corymb at the top of the branches; fruit, large globular silicle, containing several seeds.

P. P. This plant has an acrid and slightly bitter taste, and a very penetrating smell when bruised; entire, it is inodorous.

C. P. It seems to be composed of the same principles as the preceding, which are soluble in water and alcohol.

Th. E. Its modus operandi upon the economy, and its employment are the same as those of the horse-radish.

D. & M. of Adm. Infusion, from ℥j. to ℥ij. to ℔ij. of water. *Expressed juice*, from ℥ss. to ℥ij. *Anti-scorbutic juice*, P. (Cochlearia, water-cress, and buckbean, āā. equal parts.) Same doses.——*Spiritus cochleariæ*, P. (Cochlearia, 3 parts; alcohol, 2 parts.)—Pr., Pol. (Cochlearia, 2 parts; alcohol, 1 part; water, q. s.) —A., R., B. (Cochlearia, 4; alcohol, 5; water, a sufficient quantity.) Dose, from ʒss. to ʒiv.——*Spiritus cochleariæ compositus*, B. (Cochlearia, 80; sage and crisped mint, āā. 6; fresh orange peels, 12; nutmeg, 1; alcohol, 72; water, 216.) Dose, from ℥ss. to ℥j., two or three times a day.——*Conserva cochleariæ*, A., R., B., F. (Cochlearia, 1; sugar, 3.) Dose, from ʒj. to ʒij.——*Syrupus cochleariæ*, P. (Cochlearia juice, 1; sugar, 2.) ℥ss. to ℥ij. and above.

Water Cress,	*Nasturtii aquatici herba, sisymbrium nasturtium*, Lin.
Dittander,	*Lepidium sativum*, Lin.
Cardamine,	*Cardamine pratensis*, Lin.
	Sisymbrium officinalis, Lin.
Stinking Hedge Mustard,	*Erysimum alliaria*, Lin.

And many other plants of the same family are all endowed with the same properties as the preceding articles, and may be used for similar purposes.

Family Polygaleæ.

Seneka, or Rattlesnake Root. *Radix polygalæ senegæ. Polygala senega*, Lin. A perennial plant, growing in North America.

P. U. The root.

B. C. Stem herbaceous, from eight to ten inches high; leaves sessile, oval, of a light green colour; flowers small, in terminal spikes, calix five deep, and irregular divisions; corolla irregular, five petals; fruit, a compressed and bivalve capsule, with two monospermous cells, containing black elongated seeds, terminating in a point.

P. P. Root of a variable size, from that of a quill to the size of the little finger, contorted, ramose, having on one side a sort of longitudinal membranous margin. Its bark is grayish, resinous, and covering a whitish and lignous *meditullium*. Its odour is weak and nauseous, its taste sweet at first, afterwards acrid and bitter, provokes coughing and salivation.

C. P. According to M. Gehlen, this root contains *senegine*, 6.15; resin, 7.5; sweet extractive matter, 26.85; gum and albumen, 9.5; lignous fibres, &c. 50. According to Dr. Giacomo Folchi, it is composed of a thick oil, partly volatile; free gallic acid; an acrid matter; a yellow colouring matter; a little wax; a gummy extract; a matter containing nitrogen, similar to gluten; woody fibres, sub-carbonate, sulphate and muriate of potassa; carbonate, sulphate, and a little phosphate of lime; carbonate of magnesia, iron, and silex.

M. Peschier, an eminent pharmaceutist of Geneva, asserts that he obtained from the polygala senega three new substances, which he calls *polygalina*, *polygalic acid*, and *Isolisine*. The two first substances form in the root a polygalate of polygalina. Water and alcohol take up the remedial principles of this root.

Senegine seems to be the active principle of polygala. It is solid, brown, translucid, of an unpleasant taste; when reduced to powder, its smell provokes sneezing. It is insoluble in water and ether, but easily soluble in alcohol. It has not yet been introduced into practice.

Th. E. The polygala is a very energetic stimulant, which, in large doses, often produces vomiting and alvine evacuations. In moderate doses, this remedy promotes the secretion of urine, perspiration, and ptyalism. It was considered, for a long time, capable of exercising an especial action on the lungs, and was administered in all pulmonary diseases, even in cases of acute inflammations. We no longer believe in these supposed specific virtues. It is exhibited successfully in rheumatic affections, in the last period of pulmonary catarrhs, in hydrothorax and certain dropsies, in croup, amenorrhœa, &c. In Germany, according to Dr. Ammon, it is administered internally with great success in the treatment of very acute ophthalmia, in which antiphlogistic remedies often fail.

D. & M. of Adm. Powder, from gr.x. to ʒss. *Dr. Ammon's anti-ophthalmic pills.* (Polygala, ʒiij.; medicinal soap, ʒj.;) for three grain pills. Dose, ten a day.——*Decoctum senegæ*, L., P., U. S. (Polygala, ℥j.; water, Oij.) *Stimulant mixture*, Paris H. (Infusion of polygala, ℥vj; syrup of tolu, ℥j; gum ammoniac, ʒss.) Dose, a table-spoonful every two hours.——*Syrupus senegæ*, U. S. (Seneka root, ℥iv.; water, Oj.; sugar, ℔j.)—Pr., Pol., F. (Polygala, 1 part; water and sugar, āā. 18 parts.) Dose, from ʒij. to ℥j. in a suitable vehicle.——*Mel scillæ compositum*, U. S. *Dr. Coxe's hive syrup.* (Squill and seneka root, āā. ℥iv.; water, Oiv.; clarified honey, ℔ij.; prepare a syrup, to every ounce of which one grain of tartarized antimony is added.) This syrup is one of the best medicines employed in rachitis, hooping cough, croup, &c.; it operates by purging, vomiting, and sweat. The dose varies from ten drops to one or more tea-spoonfuls every fifteen or thirty minutes, or every hour, according to the age of the patient or to the violence of the disease.

The Common Polygala. *Polygala vulgaris*, Lin. A very common native plant, may be substituted for the Polygala senega. Indeed it possesses the same properties, but in a smaller degree.

Family Scrophulariæ.

Speedwell. *Veronicæ maris summitates. Veronica officinalis*, Lin. A native plant. It grows on hills and in woods, and blossoms in June and July.

P. U. The leaves and tops.

B. C. Stem herbaceous and cylindrical; leaves opposite, oval, dentate, and pubescent; flowers violet, in axillary spikes; calix four-parted; corolla rotate, with fertile stamina; stigma simple; fruit, a lenticular capsule.

P. P. This plant is slightly bitter and aromatic, and of a faint odour.

C. P. It communicates to water a green colour, and imparts to it a slight aromatic taste.

Th. E. The speedwell is a weak stimulant. It was once considered as an excellent remedy in icterus, gravel, and other diseases; but now its employment is very much neglected. It is employed in infusion, in chronic pulmonary catarrhs, and in cases requiring a slightly stimulant and sudorific drink. The juice of its fresh leaves is administered as an antiscorbutic.

D. & M. of Adm. Infusion, two or three pinches to two pounds of water. *Distilled water*, P. ℥ij. to ℥iv. *Expressed juice*, ℥j. to ℥ij.

The *Veronica beccabunga, V. chamædris, V. teucrium, V. spicata*, possess the same properties as the preceding. They are now altogether out of use.

Family Synanthereæ.

Corymbiferæ.

Wormwood. *Absynthii majoris summitates. Artemisia absynthium*, Lin. A perennial native plant, growing in stony and uncultivated places, and flowering in July and August.

P. U. The leaves and flowered tops.

B. C. Stem herbaceous, covered with a whitish down; leaves tripinnatifid, whitish on both sides; flowers flosculous, small, yellowish, forming a long and pyramidal panicle; the florets of the centre hermaphrodite, fertile, five-dentate; those of the circumference, female, bidentate, without pappus.

P. P. This plant has a strong, aromatic smell, and a very bitter, aromatic taste.

C. P. According to M. Braconnot, it is composed of a very bitter matter containing nitrogen, soluble in cold water, but very lit [illegible] l, 18; a matter containing nitrogen and almost insipid, 8; a resiniform substance extremely bitter, soluble in alcohol and boiling water, from which it precipitates on cooling, 1.4; a green volatile oil, 0.9; chlorophylline, 3; albumen, 7.5; fecula, 1; salts of potassa, 7.5; lignous fibre and water, 552. Cold water and alcohol dissolve its active principles.

Icomp. Subst. The sulphates of iron and zinc, and acetate of lead.

Th. E. Wormwood possesses very energetic stimulant and tonic properties. Administered in too large doses, it creates heat in the epigastric region, thirst, and all the other symptoms of irritation of the stomach. In moderate doses it promotes appetite, facilitates digestion, quickens the circulation; in a word, it communicates to the whole economy a strengthening influence. It is very frequently and successfully exhibited in all cases requiring a tonic and stimulant medication, especially in dyspepsia and other atonic diseases of the digestive canal, in certain amenorrhœæ, chronic leucorrhœæ, in obstinate diarrhœæ, maintained by debility of the membranes; in certain cases of gout, &c. It has produced good effects in intermittent fevers. Finally, it is exhibited, with advantage, as an anthelmintic, whenever the digestive organs are not in a state of inflammation.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, from ℥ss. to ℥j. to ℔j. of cold water.——*Tinctura absynthii*, P., Den., B., F., Pol., Pr. (Wormwood, 1; alcohol, 6.) Doses, from ʒss. to ij.——*Tinctura absynthii composita*, P. (Large and small wormwood, āā. 8; cloves, 8; sugar, 4; alcohol, 125.)—F. *Essentia amara*, Den. (Wormwood, 4; blessed thistle, bitter oranges, and gentian root, āā. 1; alcohol, 48.) Dose, from ʒss. to ij. in a mixture.——*Vinum absynthii*, P. Dose, from ℥ij. to iv.——*Oleum absynthii*, P.——*Oleum absynthii æthereum*, Pol., Den., Pr. Dose, gutt.j. to iv.——*Extractum absynthii*, L., P., Pol., Pr., A., F., Den., B. Dose, from ʒss. to ʒj.——*Syrupus absynthii*, P. (Small and large wormwood, āā. 3; water, 48; sugar, 96.) Dose, from ℥ss. to ℥ij.

Roman or Small Wormwood. *Artemisia pontica*, Lin. Has a weaker and more agreeable smell than the preceding; it does not seem so active. It is used in the same cases and manner.

Mugwort. *Artemisia vulgaris*, Lin.

Southern Wood. *A. abrotanum*, Lin., &c., possesses the same properties as wormwood, for which it may be substituted.

Roman Chamomile. *Chamæmeli romani flores. Anthemis nobilis*, Lin. A perennial plant, native of Europe, flowering in June or July.

P. U. The dry flowers.

B. C. Stem herbaceous, ramose, prostrate, from eight to ten inches high; branches one-flowered; leaves bipinnate, pubescent; flowers radiate; receptacle paleaceous; the florets of the centre, yellow, hermaphrodite, fertile; those of the circumference, white; female flowers, fertile; fruit, with a small membranous protuberance at the top.

P. P. Chamomile flowers, such as they are found in the shops, are white, desiccated, of a very aromatic and rather pleasant smell, and of a very bitter, warm taste.

C. P. They contain an essential oil of a fine blue colour, a gummo-resinous principle, camphor, and tannin. Water and alcohol dissolve their active principles.

Incomp. Subst. Solution of gelatine, infusion of yellow bark, sulphate of iron, nitrate of silver, corrosive sublimate, and the salts of lead.

Th. E. The Roman chamomile is a moderately energetic stimulant, possessing, on account of its bitterness, some tonic properties, which have rendered it a popular remedy for a number of diseases. It may be employed with success to stimulate the digestive functions in dyspepsia, chlorosis, gout, in flatulent colics, &c. It may be also advantageously used in slight intermittent fevers, and spasmodic affections. A strong infusion, taken warm, and in a large quantity, provokes vomiting; in consequence of which, it is used in this manner to assist the action of emetics. Finally, it may be administered with advantage as an anthelmintic.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, in close vessels, from ʒj. to ʒij. to two pints of boiling water.——*Infusum anthemidis*, L., E., U. S. (Chamomile, ʒij.; boiling water, Oss.) Dose, from ℥j. to ℥ij.——*Decoctum anthemidis nobilis*, E., D. (Chamomile flowers, ℥j.; caraway or fennel seeds, ℥ss.; water, Oij.)——*Extractum anthemidis*, *Extractum florum chamæmeli*, L., E., D., U. S., P., Pr., Den., B., F. Dose, from gr.xij. to ʒj.——*Oleum volatile, or æthereum*, Pr., A., L., E., R. Dose, gutt.v. to x.

Externally. The infusion in lotions, fomentations, enema, &c.——*Oleum infusum chamæmillæ*, P., Pr., Pol., Den., B. In frictions, embrocations, or liniments.

Pyrethrum. Pellitory of Spain. *Pyrethri radix*. *Anthemis pyrethrum*, Lin. A perennial plant, native of the Levant.

P. U. The root.

B. C. Stems numerous, high; flowers solitary at the top of the branches, large, radiate; the flowrets of the disc yellow; those of the circumference are white on the upper surface, and red underneath.

P. P. This root is fusiform, of the size of the finger, long, grayish, and rugose externally; whitish internally; of a strong, unpleasant smell when a large quantity is collected together, and of a very acrid, sharp taste, provoking salivation.

C. P. According to Gauthier it contains an oily matter, of a nauseous odour, and of an acrid, burning taste; a yellow principle, some inuline, gum, &c. Water and alcohol dissolve its active principles.

Th. E. This root possesses very energetic, irritating properties. Applied to the skin it produces a powerful rubefaction. It was once administered as a stomachic; now, it is scarcely used except as a masticatory, to promote the discharge of saliva, and to irritate the interior of the mouth in toothache, certain pains in the head, and palsy of the tongue. It may likewise be exhibited as a gargle in chronic inflammations, and swelling of the amygdalæ. It enters into a great number of dentifrice powders, elixirs, &c.

D. & M. of Adm. In nature, as a masticatory, ʒss. to j.——*Tinctura pyrethri*, P. (Pellitory of Spain and water, āā. 1; alcohol, 5.) ʒss. to j. *Powder*, as a sternutatory, pinch 1. *Gargle*, ʒss. to ℔j. of water, reduced to one-third.

Fever-few. *Matricariæ* vel *Parthenii summitates. Matricaria parthenium*, Lin. A biennial native plant, very common in cultivated places.

P. U. The flowered tops.

B. C. Stems herbaceous, erect, pubescent; leaves winged and large, with pinnatifid leaflets; flowers radiate, solitary, those of the disk yellow and hermaphrodite; those of the circumference white; the ligulate are female, four-toothed; receptacle naked, without scales; fruit without pappus, with a membranous border.

P. P. The smell of the fever-few is strong, and very unpleasant. Its taste is warm and bitter.

C. P. It contains a bluish essential oil. Water and alcohol take up its active principles.

Th. E. It is a stimulant very analogous to the Roman chamomile, but it is not frequently employed. It is sometimes administered in amenorrhœa or leucorrhœa, caused by general debility.

D. & M. of Adm. *Powder*, ℈j. to ʒj. *Infusion*, from ʒj. to ʒij. to ℔ij. of water. *Distilled water*, P. ʒj. to iij. *Expressed juice*, ℥j. to ij.

Externally. In injections, lotions, fomentations, and poultices.

The following plants are all possessed of stimulant properties, and they were used formerly in the same cases as the preceding; but they are now nearly obsolete:—

Common Chamomile. *Chamæmeli vulgaris flores, Matricaria camomilla*, Lin.

Milfoil. *Millefolii herba et flores, Achillea millefolium*, Lin.

Sneeze-wort. *Ptarmicæ folia, Achillea ptarmica,* Lin.; is principally used as a masticatory and sternutatory.

Single Marigold. *Calendulæ flores, Calendula officinalis,* Lin.

Wild Marigold. *Calendula arvensis,* Lin.

Balm-leaved Spilantus. *Spilanthus acmella,* Lin.

Common Tansy. *Tanacetum vulgare,* Lin.

Officinal Alecost. *Tanacetum balsamita,* Lin., &c. &c.

Family Labiatæ.

Peppermint. *Menthæ piperitæ herba et flores, Mentha piperita,* Lin. Perennial native plant, cultivated on the continent of Europe, and in America.

P. U. The whole plant.

B. C. Stem erect, one or two feet high, ramose; leaves oval, dentate on the periphery; flowers violet, in short and very close spikes at the top of the branches.

P. P. The odour of this plant is agreeable and penetrating: its taste is pungent, slightly bitter, followed by a sensation of cold in the mouth.

C. P. It contains an abundance of yellowish essential oil, containing camphor, a little resin, and extractive matter. Its active principles are soluble in water and alcohol.

Th. E. Peppermint possesses very decided stimulant properties, for which it is indebted to its essential oil. It is consequently administered, with great advantage, in affections requiring the employment of stimulants, and especially in atonic and nervous affections of the stomach, such as dyspepsia, flatulent colics, spasmodic vomiting, cardialgia, &c. It is likewise useful in certain amenorrhœa, in chlorosis, hysteria, and other diseases called nervous. Finally, it is often associated with other remedies, and especially with purgatives, to facilitate their action, or conceal their odour or unpleasant taste.

D. & M. of Adm. Powder, from ℈j. to ʒss. Very seldom used. *Infusion,* one or two pinches, to a quart of boiling water.——*Aqua menthæ piperitæ,* L., E., D., P., U. S., &c. Dose, from ℥i. to ℥iv. alone, or most commonly in a mixture.——*Aqua menthæ piperitæ vinosa,* Pr., Pol. (Peppermint and alcohol, āā. equal parts; water, as much as necessary.) Dose, from ʒij. to ʒiv.——*Tinctura menthæ piperitæ,* U. S. (Oil of peppermint, f.ʒij.; alcohol, Oj.)——*Spiritus menthæ piperitæ,* L., E., P., A., R., B. (Peppermint leaves, ℔jss.; alcohol, Cj.; distil.) Dose, from gutt.xx. to ʒss.——*Syrupus menthæ piperitæ,* P., B. (Peppermint, 1 part; distilled water, 32 parts; sugar, as much as necessary.——*Oleum menthæ piperitæ.* Dose, from gutt.ij. to iv.——*Elæo-saccharum menthæ piperitæ,* A. (Oil of peppermint, 1 part; sugar, 24 parts.——*Peppermint lozenges,* P. (Oil of peppermint, 1 part; sugar, 86 parts; water, as much as sufficient.) This kind of lozenges are commonly called peppermint drops.—No. vj. to xij. for a dose.

The other plants of the same genus possess very nearly the same virtues as the preceding; they are consequently employed in the same cases, and in the same manner. The most used of them are, the CRISPED MINT, *Mentha crispa*, Lin.; the GREEN MINT, *M. Viridis*, which is very much used in England; the PENNYROYAL, *M. pulegium*, Lin.; the ELEGANT MINT, *M. gentilis*, Lin.

SAGE. *Salviæ folia*. *Salvia officinalis*, Lin. A native plant, and cultivated in our gardens.

P. U. The leaves and flowered summits.

B. C. Stem ramose; leaves elongate, with denticulate borders, the surface rugose; flowers violet, in close and verticillate spikes; calix sub-campanulate; corolla tubular, two stamina with short filaments, anthers with two cells, separated by a connecting filamentiform membrane.

P. P. Sage has a strong aromatic odour; its taste is warm, sharp, and slightly bitter.

C. P. It contains a large quantity of essential oil of a green colour, furnishing 0.125 of camphor, a little gallic acid and extractive matter. Water and alcohol dissolve its active principles.

INCOMP. SUBST. The salts of iron.

TH. E. Sage is stimulant and tonic. It may be administered with success in the last stage of chronic catarrhs, in dyspepsia, in old diarrhœa, spasmodic vomiting, &c. It is also considered as a powerful emmenagogue and carminative. Its infusion is employed as a gargle in cases of atonic angina, with relaxation of the soft palate.

D. & M. OF ADM. *Powder*. gr.xv. to ℈j. *Infusion*, ʒij. to ℥ss. to ℔j. of water. *Distilled water*, P., POL., A., PR., ℥j. to ℥iij. *Essential oil*, P., gutt.ij. to v. *Vinegar*, P., ʒjss. to ℥j.

MEADOW SAGE. *Salvia pratensis* and GARDEN CLARY, *Salvia Selarea*, Lin. Both possess the same properties.

ROSEMARY. *Rosmarini hortensis herba*. *Rosmarinus officinalis*, Lin. An evergreen shrub, native of the south of France, and cultivated in our gardens.

P. U. The leaves and flowered summits.

B. C. Stem from seven to eight feet high; leaves sessile, elongated, narrow; flowers of a pale blue colour, in small spikes at the summit of the branches; calix bilabiate; corolla, tube inflated above, two saliant stamina, anthers cohering.

P. P. This plant has an acrid, warm, and slightly astringent taste, and a very strong odour.

C. P. It contains a large quantity of colourless essential oil, from which M. Proust has extracted 0.10 of camphor, a resinous principle, and a little tannin.

TH. E. Rosemary possesses the same properties as the preceding substances, and may be employed in the same cases, especially in difficult digestion, chlorosis, &c.

D. & M. OF ADM. *Powder*, gr.x. to ℈ij. *Infusion*, ʒj. to ℥ij. to ℔ij. of boiling water.——*Spiritus rosmarini*, *Queen of Hungary's water*, L., E., D., U. S., A., POL., F., P. ʒj. to iv.——*Acetum aromaticum*, P., E., PR., DEN., F. (Rosemary, wormwood, sage, mint, āā. 8; cinnamon, 2; cloves and nutmegs, āā. 1; vinegar, 64.) *The four thieves' vinegar*, P. (It is very nearly the same composition, with the addition of garlic.)

Externally. In lotions, baths, and fumigations.

LAVENDER. *Flores lavandulæ. Lavandula vera*, De Cand. A perennial plant, native of the south of France, and cultivated in England, flowering from May to September.

P. U. The flowered summits.

B. C. Stem woody, ramose, whitish; leaves lanceolate, pointed, entire, glaucous; flowers bluish, verticillate, sessile, disposed in terminal spikes.

P. P. Its smell is aromatic and pleasant, and its taste bitter and warm.

C. P. It contains a large proportion of essential oil, of a straw colour, which furnishes 0.25 of camphor. Water and alcohol take up its active principles.

INCOMP. SUBST. Sulphate of iron.

TH. E. Although lavender possesses very energetic stimulant properties, it is now very little used, except as a perfume. It may, however, be administered with advantage under the same circumstances as the preceding substances. Some practitioners recommend it in cases of violent periodical headaches, in tremor of the limbs, and other affections depending on a want of action of the nervous system. The powder is used occasionally as a sternutatory.

D. & M. OF ADM. *Powder*, from ℈j. to ʒss.—*Infusion*, from ʒj. to ʒij. to a pint of boiling water.——*Aqua lavandulæ*, P., A.——*Spiritus lavandulæ*, L., E., D., P., U. S., &c. (Fresh lavender, ℔ij.; alcohol, Cj. or more.) ——*Tinctura*, *seu Spiritus lavandulæ compositus*, U. S. (Spirit of lavender, Oiij.; spirit of rosemary, Oj.; cinnamon, ℥j.; cloves, ʒij.; nutmeg, ℥ss.; red sanders, ʒij.)—L., E.. D., F., differing slightly from the preceding.——*Oleum lavandulæ*, P., A. Dose, gutt.ij. to viij. on sugar.——*Spiritus lavandulæ volatilis*, P. (Solution of sub-carbonate of ammonia, 32; oil of lavender, 1; alcohol, 4.) From gutt.x. to ʒj.

Externally. In lotions, fomentations, baths, and fumigations.

The **BROAD-LEAVED LAVENDER.** *Lavandula spika*, Lin.

A variety of the preceding, for which it is almost always mistaken. It furnishes an essential oil, called *oil of spike.*

The STŒCHAS or FRENCH LAVENDER. *Lavandula stœchas,* Lin. A plant, native of the south of France, differing only from the preceding by its more agreeable smell. It contains, like the former, a very odorous essential oil, and may be an excellent substitute for it; it appears, however, to be less active. A *syrup of stœchas,* P., is prepared from this plant, and is added to antispasmodic mixtures, in the dose of from ʒss. to ℥j.; and a *compound syrup of stœchas,* which, although more active, in consequence of the very stimulant substances of which it is composed, is administered in nearly the same doses.

BALM. *Melissæ officinalis herba. Melissa officinalis,* Lin. A perennial plant, growing in the south of Europe.

P. U. The whole plant.

B. C. Stem ramose, from one to two feet high; leaves opposite, cordiform; flowers white, verticillate; calix bilabiate, the superior lip three-divided, the inferior two-divided.

P. P. The green plant has a very agreeable smell, similar to that of lemon, and a harsh and slightly aromatic taste.

C. P. It contains a white essential oil, and a small quantity of bitter extractive matter. Water and alcohol dissolve its active principles.

INCOMP. SUBST. Sulphate of iron, nitrate of silver, and acetate of lead.

TH. E. Balm is a weak stimulant and antispasmodic, and is occasionally used in nervous affections. The distilled water of this plant is a common vehicle in soothing or anodyne mixtures. Its infusion, taken warm, is slightly diaphoretic.

D. & M. OF ADM. *Infusion,* 1 or 2 pinches, to ℔ij. of boiling water. *Distilled water,* P., A., POL., PR., DEN. Dose, ℥j. to ℥iv.——*Spiritus,* P. Dose, ʒss. to ʒij.——*Aqua carmelitana,* DEN. (Balm, 18; lemon peel, 4; nutmeg, coriander-seed, āā. 2; cinnamon, 1; alcohol, 72; balm water, 36.)

Externally. In lotions, baths, and fumigations.

HYSSOP. *Hyssopi folia et summitates. Hyssopus officinalis,* Lin. A plant, native of the south of France, and cultivated in our gardens.

P. U. The leaves and flowered summits.

B. C. Stem sub-frutescent, ramose, one foot high; leaves sessile, narrow, acute; flowers blue or pink, united in the axilla of the superior leaves.

P. P. Hyssop has an agreeable and aromatic odour, and a warm, pungent, and slightly bitter taste.

C. P. It contains a yellow essential oil, some bitter principles, and sulphur. Its remedial principles are soluble in water and alcohol.

Th. E. This substance is slightly stimulant, and is recommended as an expectorant; is frequently used in chronic pulmonary catarrhs, in phthisis, and other affections of the lungs.

D. & M. of Adm. *Infusion*, 2 or 3 pinches, to ℔ij. of boiling water. *Syrup*, P. ℥ss. to ℥ij.

Horehound. ***Marrubii albi folia. Marubium vulgare***, Lin. An indigenous perennial plant, very common, and flowering all the summer. P. U. The leaves.

B. C. Stem hairy, whitish; leaves oval, tomentose; flowers whitish, small, verticillate; calix ten-dentated.

P. P. Horehound has an aromatic, musk-like odour, and an acrid, warm, and bitter taste.

C. P. It contains a volatile oil, a bitter principle, and some gallic acid. Water and alcohol dissolve its active principles.

Incomp. Subst. Sulphate of iron.

Th. E. It is an energetic stimulant, and may be used in the last stage of catarrhs and peripneumony, in phthisis, and obstructions of the liver, &c. It may also be administered as an emmenagogue, an antispasmodic, and a diaphoretic. In large doses it sometimes acts as a laxative.

D. & M. of Adm. Infusion, 1 to 2 pinches, to ℔ij. of boiling water. *Syrup*, P ℥ss. to ℥ij.

Blue Scull-cap. Hooded Willow Herb. ***Scutellaria lateriflora***, Lin. A plant, native of N. America, growing abundantly on the banks of rivers, near ditches, ponds, &c. P. U. The whole plant.

B. C. Stem from one to three feet high, square, branched, glabrous; leaves opposite, narrow-pointed, dentate, and supported by long petioles; flowers in axillary, lateral, and leafy racemes; flowers small and blue; calix, margin entire and closed with a galeate lid after flowering.

This plant has been of late highly reputed as an antidote in canine madness, and kept a secret for a long time. Dr. Vandeveer acquired extensive popularity by the success he obtained from the exhibition of this article, and is said to have prevented upwards of three hundred persons from becoming mad. The plant is used in powder or infusion, and may be exhibited in unlimited doses without producing unpleasant effects. It is said to possess a considerable efficacy as an antispasmodic in cases of spasm and other nervous affections. However, the supposed wonderful virtue of this plant, in the cure of hydrophobia, still requires confirmation.

The GROUND IVY,	*Hederæ terrestris herba. Glechoma hederacea.* Lin.
STINKING HOREHOUND,	*Marrubiastrum. Ballota nigra,* Lin.
COMMON GERMANDER,	*Chamædryos herba. Teucrium chamædris,* Lin.
MARUM GERMANDER,	*Teucrium marum,* Lin.
GROUND PINE,	*Teucrium chamæpitys,* Lin.
FRENCH GROUND PINE,	*Teucrium iva,* Lin.
WATER GERMANDER,	*Teucrium scordium,* Lin.
WOOD BETONY,	*Betonica officinalis.*
SWEET & WILD MARJORAM,	*Origanum majorana* and *O. vulgaris,* Lin.
COMMON THYME, & MOTHER OF THYME,	*Thymus vulgaris* and *T. serpillum.*
CATMINT,	*Nepeta cataria,* Lin.
COMMON BASILIC,	*Ocymum basilicum,* Lin.
SUMMER SAVORY,	*Satureia hortensis,* Lin.
DEAD-NETTLE,	*Lamium album,* Lin.
MOTHER-WORT,	*Leonurus cardiaca,* Lin.
SELF-HEAL,	*Prunella vulgaris, &c. &c.*

Have all been more or less employed, but they are now almost completely out of use, although they possess very determinate stimulant properties. They are also in the family *Labiatæ,* a great number of plants possessing more or less energetic stimulant virtues, and which may be substituted for each other without any inconvenience.

Family Umbelliferæ.

GARDEN ANGELICA. *Angelicæ sativæ radix, herba, et semina. Angelica archangelica.* A biennial plant growing in the north of Europe, and found sometimes in England.

P. U. The root, stem, and seed.

B. C. Stem cylindrical, large, ramose, striate and hollow internally; leaves very large, bi or tri-pinnate; flowers white, in large and numerous umbels, involucrum composed of several leaflets; the partial involucrum of about eight folioles; petals slightly curved, two divergent styles; fruit ovoid, membranous on the edges, with five longitudinal and saliant parallel lines.

P. P. The desiccated root, such as it is found in the shops, is large, fleshy, fusiform, very ramose, gray and wrinkled externally, and whitish internally; the seeds are short, obtuse, and bordered with membranaceous wings; the stems are fleshy, smooth, and of a reddish colour. Every part of this plant has a strong and very pleasant smell, and a bitter, warm, musk-like taste.

C. P. The whole plant, the root especially, contains an essential oil, resin, inuline, and an extractive matter. Water and alcohol dissolve its active principles.

Th. E. Angelica possesses very powerful stimulant properties, and may be exhibited with advantage in all diseases in which an excitant remedy may be useful. It is administered with success in disorders dependent on debility of the digestive organs, such as dyspepsia, spasmodic vomiting, flatulent colic. It is useful likewise in certain nervous cephalalgic pains; in tremor of the limbs, chlorosis, hysteria, &c. It has been recommended as a powerful emmenagogue, and under other circumstances as a diaphoretic. In the last stage of chronic catarrhs of the lungs it has been exhibited with success, in order to facilitate expectoration, and restore its tone to the mucous membrane.

D. & M. of Adm. Root and seeds. *Infusion*, ʒij. to ʒiv. to ℔ij. of boiling water. *Distilled water of the seeds*, P., ℥j. to ℥ij.——*Tinctura angelica*, A. (Angelica root, 1; alcohol, 6.) Dose, from ʒss. to ʒij.——*Extractum angelicæ*, A., Pol., Pr. Dose, ℈j. to ʒj. *Conserve*, P., ℥j. to ℥ij. and above.

Fennel Seed. *Fœniculi fructus*. *Anethum fœniculum*, Lin. A plant, native of the south of Europe.

P. U. The seeds and roots.

B. C. Stem herbaceous, ramose, smooth, from four to five feet high; leaves vagenant at their base; cut in almost capillary folioles; flowers yellow, without involucrum or involucellum; three petals revolute; stamina spreading, longer than the corolla; fruit elongated, flattened on the edges.

P. P. The seeds are ovoid, striate longitudinally, of a pale green colour, of a strong, aromatic, agreeable smell, of a sweetish and slightly acrid taste. The root is long, of the size of the finger, and almost inodorous.

C. P. Fennel seeds contain a green essential oil, which congeals at — 5° Centig. (23° Fahr.) and a fixed, inodorous, tasteless oil. Water, and especially alcohol, dissolve their active principles.

Th. E. Fennel seed, like those of a great number of plants belonging to the family *Umbelliferæ*, are endowed with very energetic stimulant properties, for which they are indebted to the essential oil they contain. They are frequently employed in difficult digestion, such as dyspepsia, flatulency, in colic of children, serous diarrhœa, &c. They are said to increase the secretion of milk in nurses.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, ʒij. to ʒiij. to ℔j. of boiling water. *Distilled water*, P.——*Aqua fæniculi*, L., D., Pol., Den., A., Pr., F., B. Dose, from ℥j. to ℥ij.——*Oleum fæniculi*, P., R., Pol., Pr., A., B., D. Dose, gutt.v. to x.——*Elæo-saccharum fæniculi*, Pr., A. (Essential oil of fennel seed, 1; sugar, 24 to 30.)——*Syrupus fæniculi*, A. (Fennel, 1; water, 6; sugar, q. s.) Dose, from ℥j. to ℥ij.

Externally. Infusion, in fumigations, lotions, baths, injections, &c.

Dill Seed. *Anethum graveolens*, Lin., is of an oval form, convex on one side, flat on the other, having three striæ on the outside, and surrounded with a small membranous border; its taste is slightly acrid, and its odour stronger, but less pleasant than fennel seed. It is used to fulfil the same indications as fennel.

Aniseed. *Semina anisi. Pimpinella anisum*, Lin. An annual plant, native of the Levant, and cultivated in most parts of Europe.

P. U. The seeds.

B. C. Stem herbaceous, ramose, one foot high; radical leaves petiolate, round and dentate; the cauline leaves gashed into narrow and linear segments; flowers white, without involucrum or involucellum; petals equal, cordiform; stamina longer than the petals; anthers round, globular; fruit ovoid, slightly pubescent.

P. P. Seeds greenish, ovoid, lunated, striated longitudinally, of a warm, aromatic, sweet taste; of an agreeable smell.

C. P. Their shell contains a white essential oil, congealing at 10° Centig. (50° Fahr.), and the almond yields an inodorous fixed oil. Its active principles are soluble in water, and more so in alcohol.

Th. E. The properties of the aniseed are similar to those of the fennel. It is employed under the same circumstances, and even more frequently than the latter. It is a popular remedy in flatulencies.

D. & M. of Adm. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒj. to ʒij. to ℔ij. of boiling water.——*Aqua anisi*, P., A., Den. Dose, from ℥j. to ℥ij.——*Spiritus anisi* L., A. (Aniseed, 3; alcohol, 64; water, q. s.) Dose, from ʒss. to ʒiv.——*Spiritus anisi compositus*, D. (Aniseed and angelica seeds, āā. ℔ss.; alcohol, Cj.; water, q. s.) Same doses.——*Oleum anisi*, L., E., P., U. S., Pol., Den., Pr. Dose, gutt.v. to x.——*Oleo-saccharum*, P.——*Elæo-saccharum anisi*, A., Pr. (Essential oil of aniseed, 1; sugar, 24.)——*Extractum pimpinellæ*, Pol. Dose, from ℈j. to ʒss.

Caraway Seeds. *Fructus carvi. Carum carvi*, Lin. A biennial native plant, growing in meadows and pastures.

P. U. The seeds.

B. C. Seeds ovate, elongated, recurved, striate, of a green-brown colour, of a very aromatic odour and warm savour.

C. P. The seeds contain an essential oil, which dissolves completely in alcohol, and only partially in water.

Th. E. They are employed in the same cases as the preceding.

D. & M. of Adm. *Powder*, ℈j. to ʒj.——*Aqua carui*, L., A. Dose, from ℥j. to ℥ij.——*Spiritus carui*, L., E.. D. Dose, from ʒss. to ʒi.——*Oleum carui*, L., E., D., P., A., U. S., Pr. Dose, from gutt.ij. to vj.

Externally. Essential oil in frictions.

Cumin. *Fructus cumini*. *Cuminum cyminum*, Lin. An annual plant, native of the Levant, and cultivated in many parts of Europe.

P. U. The seeds.

B. C. Stem from one to two feet high, ramose; leaves gashed in very narrow segments; flowers yellow or white; involucrum and involucellum formed of a small number of leaflets; petals equal, emarginate, and cordiform; fruit illipsoid, striate.

P. P. Seeds ellipsoid, elongate, not curved, striated, of a fallow colour, of a strong smell, and very aromatic taste.

C. P. They are almost entirely composed of a yellowish essential oil, possessing a sharp taste, and insoluble in alcohol.

Th. E. The same as those of the preceding article, but it is still less employed. It is used externally as a stimulant, to induce resolution.

D. & M. of Adm. Powder, seldom. Dose, from ℈j. to ʒss. *Infusion*, from ʒj. to ʒij. to ℔ij. of water.

Externally. *Emplastrum cumini*, L. (Cumin, caraway, laurel berries, and wax, āā. ℥iij.; pitch, ℔iij.)

The seeds of the four last mentioned plants were once known by the name of Carminative Seeds.

Coriander Seed. *Coriandrum sativum*, Lin. An annual plant, native of Italy, and cultivated in other parts of Europe. It has, when fresh, a very unpleasant smell of bed-bugs; it is, on the contrary, very agreeable and aromatic when dry. It acts in the same manner as aniseed, &c., and enters into several officinal compounds, and especially into the *compound balm water*, P. Its infusion is occasionally employed as a sudorific. It is used likewise as a corrective of certain purgatives.

Chervil. *Scandix cerefolium*, Lin. An annual plant, native of Europe, possessing some stimulant properties. It is commonly used for culinary purposes. The expressed juice of its leaves is a part of the *temperant and diuretic juices*, P. An *extract* is prepared from it, P., which is administered in the dose of from ℈j. to ʒij.

Carrot Root. *Daucus carota*, Lin. In its wild state it is slender, acrid, and of a strong, aromatic smell. It has been employed in decoction as a stimulant, but is now seldom used. This root, cultivated, is used as food, and is too well known to require a description. It is frequently employed as a poultice in carcinomatous ulcers, and in cases of fissures of the nipples of nurses. The seed was once among the four aperient seeds, as well as *Ammi majus*, Lin., Common Parsley, *Apium petroselium*, Lin., Odorous Apium, *Apium graveolens*, Lin., which are now no longer employed.

The root of the Master-wort, *Imperatoria ostruthium*, Lin., a plant indigenous to Europe, and growing on mountains; has a warm and very aromatic taste, and seems to possess as energetic stimulant properties as those of angelica. It is now very seldom used; however, it does not deserve to be entirely neglected.

Family Aroideæ.

Sweet Flag or Calamus Aromaticus. *Acori veri radix* seu *Calamus aromaticus*. *Acorus Calamus*, Lin. A perennial plant, indigenous to Britain, and other parts of Europe, growing on the sides of ponds and marshy places, and abundant also in America.

B. C. Root horizontal, repent; stem simple, compressed; leaves narrow and ensiform; spadix cylindrical, destitute of spathe, containing a great number of hermaphrodite flowers; calix persistent; five stamina; ovary unilocular; fruit, a triangular capsule, with three cells.

P. P. Root of the size of the finger, tortuous, articulated, of a spongy structure, of a resinoid fracture, covered with shining dots; of a fallow colour externally, of a rosy-white internally; of a sharp, warm, and bitter taste, and of a pleasant aromatic odour.

C. P. The fresh root, analyzed by Tromsdorff, has furnished volatile oil, 0.1; soft resin, 2.3; extractive matter, 3.3; gum, 5.5; inuline, 1.6; lignous fibres, 21.5; and water, 65.7. Its active principles are soluble in water and alcohol.

Incomp. Subst. Acetate of lead.

Th. E. The Calamus aromaticus possesses unquestionable stimulant properties. It may be employed very successfully as a stomachic. The German practitioners administer it with advantage in cases of intermittent fevers; but, in this respect, it is very inferior to Peruvian bark. It has been highly recommended for subduing cerebral symptoms attending the second period of ataxic fever. This medicine is, perhaps, too much neglected in our days.

D. & M. OF ADM. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒj. to ʒvj. to ℔j. of boiling water.——*Extractum calami*, PR., POL. Dose, from ℈j. to ʒj.——*Tinctura calami composita*, POL. (Calamus aromaticus, 1; zedoary and angelica roots, āā 1; bitter oranges, 2; alcohol, 36.) Dose, from ʒss. to ʒj.

INDIAN TURNIP. THREE-LEAVED ARUM. *Arum triphyllum*, Lin. A perennial tuberous plant, growing in North and South America, in shady places.

P. U. The root.

B. C. Spathe univalve, cuculate, convolute at the base; leaves radical, ternate: folioles sessile, oval, acuminate, entire, and smooth; spadix naked at top, feminine in the inferior part; staminiferous in the middle; no perianthe; fruit scarlet berries, with one or several seeds.

P. P. Root tuberous, roundish, flattened, with many white fibres round the base; the lower part of the bulb covered with a blackish, loose and wrinkled skin. When fresh, it is violently acrid, pungent, and even caustic to the tongue, but not to the skin. It loses much of this property by drying. It contains a large proportion of fecula, and an amylaceous matter, similar to arrow root, has been prepared from it.

TH. E. This root has acquired great reputation in America as a remedy in pulmonary affections. It is prescribed in phthisis pulmonalis, asthma, croup, and hooping-cough, and experience has shown that it is to be ranked among the most active expectorants, and, so far, may be serviceable in old catarrhs, and other pituitous cases. It has been also prescribed with success in rheumatism, and in aphthous sore throat. An ointment made of the fresh root has been recommended in tinea capitis and tetter.

Family Aurantiaceæ.

ORANGE TREE. *Citrus Aurantium*, Lin. An evergreen tree, native both of the East and West Indies, and cultivated, on a large scale, in the south of France, and in almost all warm latitudes.

P. U. The leaves, flowers, fruit, and peel of the fruit.

B. C. Stem smooth and cylindrical; leaves oval, entire, shining on both sides, covered with glands containing a volatile oil; calix short and flat; corolla five subcampannlate petals; about twenty stamina with white filaments, very often soldered two or three together; anthers cordiform; stigma thick, globular, and yellowish; ovary ovoid, with eight, nine, or ten cells; fruit, a multilocular berry.

ORANGE TREE, LEAVES, and FLOWERS. *(See Antispasmodics.)*

ORANGE. *(See Temperants.)*

ORANGE PEEL. *Cortex aurantiorum* seu *flavedo.*

P. P. This substance is in flat fragments, of a deep yellow colour, wrinkled, and resembling shagreen on one side, owing to the presence of a number of small glands, which, in the fresh state, contain a large quantity of essential oil, of a bitter aromatic taste, and of a very agreeable odour.

C. P. It contains a good deal of essential oil, and a very bitter matter. Water and alcohol dissolve its active principles.

PREP. The rind of the orange is dried, after having been freed, as much as possible, of the white substance with which it is furnished internally.

INCOMP. SUBST. Sulphate of iron, infusion of yellow bark, and lime water.

TH. E. Orange peel acts as a stimulant and a tonic, on account of its essential oil and of its bitterness. It is used as a stomachic and carminative, in connexion with other stimulants. It enters into the composition of a great number of officinal preparations.

D. & M. OF ADM. *Powder*, from ℈j. to ʒj. *Infusion*, from ʒij. to ℥ss. to a quart of boiling water.——*Infusum aurantii compositum*, L. (Dried orange peel, ʒij.; fresh lemon peel, ʒj.; cloves. ʒss.; boiling water, Oss.) Dose, from ℥j. to ℥iv.; two or three times a day.——*Tinctura aurantii*, L., D. (Orange peel, ℥iij.; proof spirit, Oij.)——*Tinctura corticum aurantiorum*, PR., POL., A., DEN. (Orange peel, 3 parts; alcohol, 24 parts.) Dose, from ʒj. to ʒij.——*Spiritus aurantiorum corticis*, R., B. (Orange peel, 1 part; alcohol, 5 parts.)——*Aqua aurantii corticis*, U. S.——*Aqua citri aurantii*, E., A.——*Syrupus aurantiorum*, L., E., D., P., U. S., &c. Dose, ℥j. to ℥ij. in a mixture.——*Confectio aurantiorum*, L., E., D., U. S. (Fresh orange peel, 1 part; sugar, 3 parts.) Dose, from ʒij. to ʒiv.——*Oleum corticis aurantiorum*, P., DEN., PR., POL., A. Dose, gutt.ij. to gutt.iv.——*Oleo-saccharum aurantiorum*, P., A.

LEMON PEEL, fruit of the *Citrus medioa*, Lin., has the same appearance as that of the orange; when dry, its odour only differs slightly from it, and its taste is less warm. It is employed for the same purposes, and in the same manner. An essential oil, much used in perfumery, is obtained from it. The peel of the fruit of a variety of this tree, called *citrus bergamium*, Lin., produces the essential oil of bergamot, so much esteemed as a perfume, and employed in pharmacy to scent many preparations.

CURASSOA ORANGES. *Aurantia curassaventia*, or small oranges fallen from the tree long before their maturity, have properties similar to those of the orange peel; they are, however, more bitter and acrid. They are used for the same purposes as the orange peel, and also as issue peas.

Family Theaceæ.

Tea. *Thea sinensis. Thea bohea et T. viridis,* Lin. A shrub cultivated in China and Japan.

P. U. The dry leaves.

B. C. Trunk from twenty-five to thirty feet high; leaves alternate, very smooth, elongate, from two to five inches long, tough; flowers whitish, axillary, united three or four together; calix persistent, five-divided; corolla five or six or even more petals; about one hundred stamina, collected in the centre of the flower, anthers round, bicelled; ovary round, covered with rough bristles; fruit, a three-celled capsule, each cell containing one or two seeds.

P. P. We find in commerce several kinds of teas, which may be divided into two principal species; viz. 1st, the green teas, amongst which we may distinguish principally the *hyson* tea, and the *gunpowder*, which are of a green or grayish colour, of an acrid, astringent, and slightly bitter taste, severally rolled, and of an agreeable aromatic smell; 2d, the black teas, the colour of which is of a dark brown, of a much weaker odour and taste than the green teas, and rolled, generally, lengthwise. The most esteemed are the *Souchong* and *Pekoe.* The aromatic smell of tea does not properly belong to it, as was formerly believed; it is now known that tea is indebted for its odour to the flowers of the *Olea fragrans* and *Camellia sasanqua,* with which it is perfumed when perfectly dry, and before it is put into cases.

C. P. Green tea contains a large proportion of tannin, some gum, gluten, a volatile matter, and some lignous fibres; black tea, according to Brande, contains less tannin. Water and alcohol dissolve its active principles.

Prep. The leaves are immersed in boiling water for half a minute, they are then withdrawn, permitted to drain and dry, by being stirred constantly on heated iron plates; this operation is renewed two or three times. In several species of the most esteemed teas, each leaf is rolled with the hand.

Incomp. Subst. The salts of iron, gelatine, and lime-water.

Th. E. Tea, especially the green, possesses stmulant properties rather energetic; and, as it is almost always taken in the form of warm infusion, it acts likewise as a diuretic and as a diaphoretic. This drink is very commonly used among the northern people of Europe. It powerfully assists digestion, and it is administered in France as a popular remedy in indigestions.

D. & M. OF ADM. Infusion, ʒj. to ʒij. to ℔ij. of boiling water.

Family Coniferæ.

TURPENTINE. *Terebinthina.* A resinous juice obtained from several trees of the family *Coniferæ.* The principal kinds of turpentine are—the AMERICAN TURPENTINE, furnished abundantly by the *Pinus palustris,* Lin., *P. australis,* Michaux, a tree growing principally in the southern states; the COMMON TURPENTINE, *Terebinthina communis,* obtained from the *Pinus sylvestris* and *P. rubra,* Lin.; wild and Scotch pines, both trees native of the north of Europe; the BORDEAUX TURPENTINE, *Terebinthina picea,* from the *P. maritima,* Lin., Bordeaux pine; the STRASBOURG TURPENTINE, *Terebinthina abietina,* from the *P. picea,* Lin., silver fir tree; the VENICE TURPENTINE, *Terebinthina laricea,* from the *P. larix,* Lin., white larch; and the CANADA or FIR BALSAM, *Terebinthina canadensis,* Lin., furnished by the *P. balsamea,* American silver fir.

B. C. Trunk elevated, ramose at top, covered with a smooth, and in some species with rough bark; leaves linear, more or less elongate, pointed, persistent, of a more or less deep green; flowers monoicous, male flowers in scaly aments; two anthers fixed to the scales; female flowers amentaceous as well as the male, two on each scale; fruit, a pyramidal cone of variable size, composed of imbricated and thick scales, containing almonds of a turpentine taste.

P. P. These turpentines, are, generally, thick, and of the consistence of honey, of a light yellow, or brown colour; some are turbid, others transparent; of a strong smell, *sui generis;* of an acrid, bitter, and nauseous taste. The Venice turpentine, the most esteemed, is, in general, tolerably liquid, slightly greenish, of a strong smell, but less unpleasant than that of the preceding kinds; of a warm and bitter taste; the Canada balsam is thick, glutinous, whitish, transparent, of a strong, fragrant smell, analogous to that of the balsam of gilead, and of a bitter and slightly rancid taste.

C. P. These turpentines are composed of resin, and essential oil, of which we shall soon speak. It is entirely soluble in alcohol, and partially so in water.

PREP. A series of wounds, about three inches long by one deep, are made in the trunk of the pines, and the juice flowing from these wounds is received in vessels or cavities dug at the foot of the tree. It is then purified by being warmed and strained through a straw filter, or else by being exposed to the sun in wooden boxes, with small holes in the bottom, through which the turpentine flows into an appropriate vessel. This substance, purified by the latter process, is far superior to that obtained by the former mode.

Th. E. Turpentine is a very powerful stimulant. Applied to the skin, it irritates and rubefies it. Administered internally in large doses, it produces, in the first instance, nausea, vomiting, and abundant alvine evacuations; afterwards, it is absorbed, and it produces a lively excitement throughout the whole economy, as is evinced by the frequency of the pulse, the heat and redness of the skin, cephalalgia, vertigoe, &c. In moderate doses, it causes similar, but less intense effects. The stimulant action of this substance seems, in a great number of cases, to exert itself more especially on the genito-urinary organs, and the mucous membranes generally. It is well known that the urine of persons who has taken it, or even who have breathed momentarily its vapours, acquires a remarkable smell of violets, and that the saliva is often imbued with its odour and unpleasant taste. It is employed with advantage in the last period of chronic catarrhs of the bladder, and of the other parts of the urinary system; in chronic pulmonary catarrhs, in order to facilitate expectoration, and stimulate the mucous membrane. It is likewise very useful in certain mucous diarrhœæ, maintained by the atony of the intestinal canal, and, in some cases, of gout and rheumatism. Finally, it is frequently applied externally to cleanse wounds and ulcers; and it enters into the composition of numerous salves and irritating plasters.

D. & M. of Adm. *Internally*, from gr.x. to ℥j. two or three times a day, either in pills or suspended in an emulsion.——*Terebinthina cocta*, P., B., Pol., Pr., A. (This is prepared by depriving it partly of its essential oil, by boiling it in water It is of course much less active.) Dose, from ℥ss. to ℥j. in pills.

Externally. *Unguentum digestivum*, P. (Turpentine, 2 parts; yolk of eggs, 1 part; oil, sufficient quantity.)—R. (Turpentine, 3 parts; yolk of eggs, 4 parts ——*Balsamum terebinthinatum*, Den., A. (Turpentine and essential oil of turpentine, āā. 4 parts; yellow wax, 3 parts.)——*Baume de Genevieve*, Balsam of Genevieve, P. (Turpentine, 64 parts; olive oil, 192; yellow wax, 32; red sanders, 7; camphor, 1.)——*Unguentum terebinthinæ*, Pr. (Turpentine, 12; honey of roses, 4; oil of John's wort, 3; aloes, 1.——*Fioravanti's balsam*, P. (Turpentine, 129; resin elemi, tacamahaca, yellow amber, galbanum, and myrrh, āā, 24; liquid styrax, 16; aloes, galangal, zedoary, ginger, cinnamon, cloves, and nutmeg, āā. 12; laurel berries, 32; alcohol, 750.) It is employed in frictions, and sometimes internally in the dose of from gutt.v. to x.——*Gummous diachylon plaster*, P. (Simple plaster, 50; turpentine, wax, and pitch, āā. 3; gum ammoniac, bdellium, galbanum, and sagapenum, āā. 1; alcohol, a sufficient quantity to dissolve the gum resins.)

Essential Oil or Essence of Turpentine. *Oleum* seu *Spiritus terebinthinæ*. A volatile oil furnished by turpentine.

P. P. A limpid, colourless liquid, of the specific gravity of

0.86; very volatile and inflammable; of a sharp, warm and acrid taste; of a strong, penetrating, and peculiar odour.

C. P. According to M. Saussure this oil contains no oxygen, but is composed of carbon, 87.78; hydrogen, 11.64; and nitrogen, 0.56. Boiling alcohol dissolves it easily, but most of it separates on cooling. It is soluble in 6 of sulphuric ether. It combines in every proportion with fixed oils; dissolves camphor, resins, and caoutchouc; unites easily with alkalies to form saponaceous compounds *(savonules)*, and commonly reddens the tincture of litmus. Combined with gaseous hydrochloric acid, by means of a frigorific mixture, it absorbs about one-third of its own weight of it, and forms a soft crystalline mass, composed of 20 of a liquid having the character of an acid, and 110 of a white, crystalline, and very volatile substance of a camphorated smell, which is called *artificial camphor*.

Prep. It is obtained by distilling turpentine.

Th. E. In large doses this oil acts as a purgative, and produces no general phenomena; but in small doses it is absorbed, and induces the same effects as turpentine; but these effects have rather more intensity, on account of its greater activity. Dr. Recamier and many other practitioners exhibit this substance with much success in the treatment of neuralgia in general, and especially in sciatica and *tic douloureux*. In these cases, some time after the ingestion of the remedy, we observe that a great sensation of heat occurs along the course of the diseased nerve, which is followed by an abatement of the pains, and often a complete cure of the disease. Spirit of turpentine is likewise administered with success in certain cases of debility of the genito-urinary organs, in obstinate blennorrhagia and leucorrhœa. It has been recommended as a diaphoretic in rheumatic affections. Several English practitioners affirm having successfully used it in the treatment of epilepsy, and even of tetanus. Finally, it is administered as an anthelmintic, principally for the cure of tænia. Dr. Kennedy, an English physician, relates numerous instances of its efficacy in cases of this kind. This substance must then be administered in doses sufficiently large to produce copious alvine evacuations.

The essential oil of turpentine is employed externally as a rubefacient, in croup, angina maligna, &c. applied to the throat by means of a piece of flannel; and as a stimulant, in neuralgia, lumbago, indolent tumours, atonic ulcers, hospital gangrene, &c.

D. & M. of Adm. *Internally*. As general stimulant, gutt.x. to xx. in honey or in an emulsion. As an anti-neuralgic, ʒss. to ʒj. in several doses. *Turpentine mixture*, Paris H. (Spirit of turpentine, ʒij.; honey of roses, ℥iv.) Dose, three spoonfuls a day. *Turpentine emulsion*, Paris H., (Spirit of turpentine, ʒij.; yolk of egg, No. 1; mint water, ℥ij.; orange flower water and ether, āā. ℥j.; tincture of cinnamon, ʒss.) Dose, one table-spoonful three times a day. *Turpentine opiate*, Paris H. (Spirit of turpentine, ʒij.; gum arabic and sugar, āā. [illegible] orange flower water, ℥j.) Dose, one-third every day in three doses. As an anthelmintic, ℥ss. to ℥ij., in an emulsion or sweetened milk. *Turpentine injection*, Paris H. (Essential oil of turpentine, ℥j.; yolk of egg, No. 1; decoction of poppy heads, ℔ss.)

Externally. In frictions or lotions.——*Linimentum terebinthinæ*, L., U. S. (Cerate of yellow resin, ℔j.; spirit of turpentine, Oss.)——*Turpentine liniment*, Paris H. (Spirit of turpentine, ℥j.; oil of chamomile, ℥ij.; Sydenham's laudanum, ʒj.)

Burgundy Pitch, *Pix Burgundica*, is nothing but the turpentine desiccated on the tree, by exposure to the action of the air, then melted, and filtered through a straw filter. This substance is in opaque and amorphous masses, softening even by the heat of the hand, and becoming then unctuous and tenacious; it is of a yellow colour, more or less deep, of an odour and taste analogous to that of turpentine. Its composition differs from the latter only by its containing less essential oil. Applied to the skin it produces rubefaction, and sometimes an irruption of small pimples, but no vesication.

It is only used externally, as a derivative in rheumatic affections, pleurodinia, certain vague pains, &c., spread on a piece of skin, and combined with about one-third of yellow wax. It enters into the composition of numerous stimulant plasters.

Colophony or Dry Resin, *Colophonia*, is the resinous part of the turpentine remaining in the still after the extraction of the essential oil by distillation. This substance is solid, transparent, very brittle, of a vitreous fracture; of a brown colour, more or less deep; tasteless; of a weak, resinous smell. It enters into the composition of a great number of plasters. Reduced to powder it is applied to the surface of bleeding wounds, to stop profuse bleeding.

Yellow Resin, *Resina flava*, *Resina pini*, is produced by stirring the preceding substance in water, when still in the liquid state. It is sold in opaque lumps, brittle, of a vitreous fracture, of a yellow colour, and almost inodorous. It is used only in the preparation of certain plasters.

The same is the case with the Black Pitch, *Pix Nigra*, which is prepared by burning slowly pieces of resinous woods, and the straw filters which have been used in the preparation of turpentine and Burgundy pitch. It is black, brittle, smooth, of a resinous smell, and very viscous when softened by heat.

It is the base of the *Unguentum picis nigræ*, L. (Black pitch and resin āā. ℥ix.; olive oil, Oj.)——P. (Black pitch, colophony, and yellow wax, āā. 1; olive oil, 4 parts.) It is is employed as a maturative and stimulant.

TAR, LIQUID PITCH, *Pissa*, *Pix liquida*, is a very impure mixture of essential oil of turpentine, resin, empyreumatic oil, carbon, and acetic acid, which is prepared by the slow combustion of the trunks of the trees which furnish the turpentine, in an oven of a peculiar construction. It is liquid, of the consistence of very thick syrup, tenacious, of a blackish brown colour, of a strong and peculiar smell. Water dissolves a part of it, and acquires a yellow colour and a sharp, empyreumatic taste. This solution possesses properties sufficiently energetic, and is employed in chronic catarrhs of the lungs and bladder, in certain diseases of the skin, rheumatism, asthma, and in scorbutic affections.

F D. & M. OF ADM. *Internally*. *Pilulæ picis*, U. S. (Tar, ʒj.; elecampane, in powder, a sufficient quantity to form a mass, to be divided into 60 pills.——*Aqua picis liquidæ*, D. (Tar, Oij.; water, Cj.)—P. (Tar, 1 part; water, 32.) From 1 to 2 pints a day. The use of the vapour of tar has recently been recommended, in England, in pulmonary consumption; but this practice does not seem to deserve any confidence.

Externally. *Unguentum picis liquidæ*, E., U. S. (Tar, 5 parts; yellow wax, 2 parts.)—L., D. (Tar and mutton suet, of each equal parts.) These ointments are used with advantage, as detergents, in scabby, foul eruptions, and tinea capitis.

FIR BUDS, *Abietis turiones*, have a bitter and resinous taste, and a turpentine smell. They are sometimes used, in aqueous infusion, in scorbutic and rheumatic, affections, &c. They enter into the composition of the *fir* or *antiscorbutic beer*, P. (Horse-radish, fir-buds, āā. 1; cochlearia, 2; new beer, 64.)

JUNIPER. *Fructus juniperi*. *Juniperus communis*, Lin. An indigenous shrub, growing on dry and barren hills, and flowering in May.

P. U. The fruit.

B. C. Stem straight, ramose; leaves verticillate, ternate, pungently acute; flowers dioicous, in axillary aments; male flowers, scales in the form of a nail, bearing on their internal surface globular and sessile anthers; female flowers, involucrum, fleshy, globular, three-parted; fruit, globular berries of the size of a pea, and containing two or three small nuciform triangular seeds.

P. P. The juniper berries are blackish, pulpy, of the size of a pea, of a strong and agreeable smell, of a bitter, warm, and turpentine taste.

C. P. They are composed, according to Tromsdorff, of volatile oil, 1; wax, 4; resin, 10; sugar, 33.8; gum, 7; lignous fibres and water, 48; besides several salts. Water and alcohol dissolve their active principles.

Th. E. Juniper berries exercise on the general economy a very decided stimulating action, which seems, however, to be exerted more especially upon the kidneys, and to increase the secretion of these organs. They impart to the urine a smell of violets, and they sometimes, when exhibited in very large doses, produce bloody urine. They are used with advantage in atonic affections of the stomach and of the intestinal canal, in chronic catarrhs of the bladder and urethra, in some diseases of the skin, in scorbutic dropsies, and in amenorrhœa, produced by debilitated state of the uterus.

D. & M. of Adm. *Powder*, from ʒss. to ʒij. *Infusion*, from ℥ss. to ℥j. to one pint of boiling water. *Distilled water*, P., A. Dose, from ℥ij. to ℥iv. *Extract*, P. from ℈j. to ʒj.——*Rob juniperi*, A., Pr., Pol., Den., F., R., B. Dose, from ℥ss. to ℥ij.——*Spiritus juniperi*, B., A.——*Spiritus juniperi compositus*, L., E., D., U. S. (Juniper, ℔j.; caraway and fennel seeds, āā. ℥jss.; diluted alcohol, C.; water, q. s.; distil one gallon.) Dose, from ʒj. to ʒij.

Externally, in fumigations, baths, poultices, &c.

Family Terebinthaceæ.

Balsam of Gilead. Mecca, Judea, or Syria Balsam. ***Balsamum Meccanense, Judaicum, Syriacum***, a resin furnished by the *Amyris opobalsamum*, Willd. and *A. gileadensis*, Lin. A shrub growing in Arabia.

B. C. Stem from six to eight feet high, with slender branches terminated by a thorn; leaves alternate, composed of from five to seven folioles, small, sessile, and shining; flowers small and geminate; calix five-parted, persistent; fruit, a small ovoid drupe, containing a monospermous almond.

P. P. This resin is liquid, whitish when recent; in time it acquires a yellow colour and a greater consistence. Its odour is very agreeable, and not unlike that of aniseed; its taste is resinous and aromatic.

C. P. It is soluble in alcohol, excepting a small portion of a peculiar resinous matter, the properties of which have been investigated by M. Vauquelin.

Th. E. The therapeutic properties of balm of gilead do not differ, in any way, from those of the other turpentines, with which it is most commonly adulterated. It is but little used at the present time, although it was once considered as posessing almost miraculous properties.

D. & M. of Adm. Gutt. viij. to ʒss. in pills, or in suspension in the yolk of an egg.

Resin Elemi. ***Elemi.*** Resin furnished by the *Amyris ele-*

mifera, Lin., and *Icica icicariba*, De Cand. Trees of South America.

P. P. The resin elemi, furnished by the latter of these plants, is that which is now met with in the shops; it is in semitransparent masses, of a yellowish colour, intermixed with greenish dots, soft and unctuous at first, dry and brittle afterwards, of a strong smell, similar to that of fennel seed, of a warm and slightly bitter taste, and of a specific gravity of 1.0182. That which is produced by the *Amyris elemifera* is very scarce, and is found only in old collections; it is in dry and yellowish pieces, weighing two or three pounds, and wrapped up in reed leaves. It does not, however, differ from the preceding.

C. P. It contains about one-sixteenth part of its weight of essential oil, which may be obtained by distillation, and to which it is indebted for its odour. It is almost all soluble in alcohol: the residue appears to be of a gummous nature. It unites, in any proportion, with fatty substances.

Th. E. Its properties do not differ materially from those of the other resins; that is to say, it acts as a stimulant. It is little used internally, it enters into the composition of several plasters, and into that of *Fioravanti's Balsam*.

D. & M. of Adm. *Unguentum elemi compositum*, L. (Elemi, ℔j.; turpentine, ℥x.; suet, ℔ij.; olive oil, f.℥ij.—D. (Elemi, ℔j.; white wax, ℥viii.; hog's lard, ℔jv.——*Arcæus's balsam*, P. (Elemi and turpentine, āā. 4 parts; suet, 3; hog's lard, 2.)——*Unguentum elemi*, Pol., B., Pr. (Elemi, turpentine, suet, lard, āā. equal parts.)

Myrrh. *Gummi-resina myrrha*. A gum resin, which seems to be furnished by the *Amyris kataf*. A shrub, native of Arabia.

P. P. This substance is in tears, or irregular drops, brittle, semi-transparent, of a reddish-yellow colour, of a shining fracture, of an agreeable smell, of a bitter and aromatic taste, and of the specific gravity of 1.36.

C. P. It is composed, according to Pelletier, of resin and essential oil, 34; gum, 66. It is more soluble in water than in alcohol; and, rubbed with one-fifth of camphor, it becomes perfectly miscible with this liquid.

Th. E. Myrrh, administered in small doses, acts as a tonic; it strengthens the stomach, facilitates digestion, and promotes appetite. In large doses it is powerfully stimulant, and its action is exerted on all the organs. It is exhibited with success in certain amenorrhœæ, in chlorosis, in atonic affections of the stomach and intestines, during convalescence after violent disease, in which the digestive function has been considerably impaired, in chronic pulmonary catarrhs, &c. It is often administered in connexion with other bitters and ferruginous preparations. Externally, it is very useful as a gargle in angina maligna. It has been highly recommended in the treatment of caries of the bones, and this practice has been very successful when the disease has proceeded from atony of the parts. It is employed likewise in the form of lotions, in cases of sordid and obstinate ulcers, and in scorbutic relaxation of the gums. This remedy is highly valued by the English, American, and German practitioners, but very little used in France.

D. & M. OF ADM. Powder, gr.x. to ʒj.——*Pulvis myrrhæ compositus*, R. (Myrrh, 60; opoponax, sagapenum, and castoreum, āā. 30; oils of mint and rue, āā. a sufficient quantity.——*Liquor myrrhæ*, PR., POL., DEN. (Myrrh, 1; boiling water, 4.) Dose, from 1 to 4 table-spoonfuls a day.——*Mistura ferri cum myrrhâ*, or *mistura ferri composita*, (see ferri sulphas, page 64.)——*Pilulæ aloes et myrrhæ*, olim. *Pilulæ rufi*, L., E., D., U. S. (Aloes, 4 parts; myrrh, 2 parts; saffron, 1 part.) Dose, from gr.x. to ℈j. once or twice a day.——*Pilulæ aloes cum myrrhâ et guaiaco*, U. S. (Aloes, ℥ss.; saffron, myrrh, āā. ʒij.; resin of guaiacum, oxide of antimony, āā. ℥ss.)——*Pilulæ myrrhæ et ferri*, U. S. (Iron filings, ℥j.; myrrh, Castile soap, āā. ʒij.; for 6 grain pills.)——*Tinctura myrrhæ*, E., U. S. (Pulverized myrrh, ℥iij.; alcohol, f.℥xx.; water, f ℥x.)—L. (Myrrh, ℥iv.; rectified spirit, Oiij.)—D. (Myrrh, ℥iij.; proof spirit, Ojss.; rectified spirit, Oss.)—P. (Myrrh, 1; alcohol, 8; water, 4.)—DEN., PR., POL., F., R., A., B. (Myrrh, 1; alcohol, 6.) Dose, from ℈j. to ʒj. in a mixture.

Externally, as a lotion, diluted with a sufficient quantity of water.—*Extractum myrrhæ*, P., PR., A., POL. Dose, from gr.v. to x.

MASTICHE. *Resina mastiche.* A resinous substance furnished by the *Pistacia lentiscus*, Lin. A shrub, native of the Levant, and carefully cultivated in the Island of Chio.

B. C. Stem from eight to ten feet high; leaves composed of from eight to twelve leaflets, all alternate, except the two superior ones, oval and lanceolate; flowers dioicous, very small, in axillary panicles; fruit pisiform and reddish.

P. P. Irregular masses, *Common mastiche*, or flat tears of various sizes, *Mastiche in tears*, dry, pulverulent, of a vitreous fracture, transparent, slightly reflecting the various colours; of a pale yellow, of an agreeable smell when heated, or simply rubbed; of an aromatic taste, and becoming soft under the teeth.

C. P. This substance is completely soluble in ether; alcohol dissolves only four-fifths; the remainder is a peculiar substance, very elastic as long as it is moist, but brittle when dry; in this latter state, it is soluble in warm absolute alcohol; but insoluble in this liquid when cold. This substance has been called *Masticine*.

TH. E. Mastiche, like all the other resins, possesses rather powerful stimulant properties. It was once very generally used, and it entered into the composition of many officinal preparations; at the present time it is very seldom employed; still, it might be useful in chronic catarrhs, serous diarrhœæ, and other affections of the same nature. The Greek women are constantly chewing this substance, in order to strengthen their gums, and perfume their breath.

D. & M. of Adm. Gr.x. to ʒss.——*Spiritus mastiches, compositus*, Pr. (Mastiche, myrrh, olibanum, āā. 1; alcohol, 24.)

Chio Turpentine. *Terebinthina pistacina*, the most esteemed and rare of all the turpentines, is furnished by the *Pistacia terebinthus*, Lin., which grows abundantly in the Grecian archipelago. It is very thick, transparent, of a greenish-yellow colour, of an agreeable smell, and of a sweet and perfumed taste. It possesses precisely the same properties as common turpentine.

Olibanum or Incense. *Gummi-resina olibanum* seu *Thus*. A gum-resin, which has for a long time been considered as a product of the *Juniperus lycia*, Lin.; but which is known now to be furnished by the *Boswellia serrata*, Roxburgh. A tree growing on the mountains of India, vulgarly called *Sálaï*.

B. C. Trunk elevated; leaves grouped at the extremity of the branches, imparipinnate, composed of ten pairs of oblong, dentate, sessile, and villose folioles; flowers numerous, small, in axillary clusters, and of light pink colour; fruit, a three-sided, three locular, and three-valved capsule, containing three large, cordiform, and winged seeds.

P. P. We meet in commerce with two sorts of incense; the first comes from Africa, and is furnished by a tree as yet unknown, which was, for a long time, thought to be the *Juniperus lycia*, Lin. It is in amorphous masses, formed of yellow tears, mixed with larger ones of a reddish colour, not very brittle, of a waxy fracture, becoming soft between the fingers; of a warm, aromatic taste, and agreeable smell. The second comes from Calcutta, and is furnished by the *Boswellia serrata;* is purer and more valued than the former. It is in round tears, yellowish, semitransparent, covered with a white dust, of a taste and odour more agreeable than the preceding, and of the specific gravity of 1.221.

C. P. This substance, according to Braconnot, is composed of resin, 56; volatile oil, 5; and gum, 30. It is partly soluble in water, and partly in alcohol. It melts with difficulty at a moderate degree of heat, and burns rapidly with a white flame, exhaling a very fragrant smell.

Th. E. Like the other substances above described, olibanum possesses very positive stimulant properties; it is, however, scarcely ever used at present, except in fumigations, vapour baths, &c. It enters into the composition of several officinal preparations, such as theriaca, &c.

D. & M. OF ADM. *Emplastrum aromaticum*, D. (Frankincense, ℥iij.; yellow wax, ℥ss.; cinnamon, ʒvj.; essential oils of pimento and lemon, āā. ʒij.)——*Pulvis fumalis*, R. (Olibanum, mastiche, and succin, āā. 3; styrax, 2; benzion and labdanum, āā. 1.) Thrown upon burning coals.

BDELLIUM. *Gummi-resina bdellium*, is a gum-resin, the origin of which is yet unknown, but which M. Lamark believes to be produced by an African *Amyris*. This substance is in round masses, of a reddish or greenish colour, of a dull. waxy fracture, of an aromatic smell, and of an acrid, bitter taste. It is composed, according to Pelletier, of resin, 59; gum, 9912; bassorine, 30.6; and volatile oil, 1.2. It is very little used; it enters into the composition of the French *gummous diachylon* plaster, and into several other plasters.

Family Leguminosæ.

PERUVIAN BALSAM. *Balsamum peruvianum*. Juice of the *Myroxylum balsamiferum*, Lin. A tree of South America. common in Peru.

There are two kinds of Peruvian balsam found in commerce; the one is very rare, of a deep brown colour, opaque, of a semi-solid consistence, of a very agreeable smell, and of a sweet and perfumed taste. It exudes from the tree by means of incisions made in its bark. The other is very common, almost black in colour, with a reddish hue, transparent, more liquid than the preceding, of a stronger smell, and a more bitter and acrid taste. It is supposed to be obtained by boiling in water the branches and the bark of the *Myroxylum*. M. Stoltz, however, thinks that both these balsams exude from the tree.

C. P. According to M. Stoltz, this substance is composed of resin, 231; a peculiar oil, 690; benzoic acid, 64; extractive matter and loss, 15. It burns easily when put over a flame, dissolves in alcohol, and yields its benzoic acid to boiling water.

TH. E. The Peruvian balsam possesses, like all the balsamic substances, very energetic stimulant properties. It was once much employed in diseases of the lungs, and it was so much esteemed as to be considered a successful remedy in pulmonary phthisis. It may be useful in chronic pulmonary catarrhs, asthma, certain atonic affections of the mucous membrane of the urinary passages, such as leucorhœa, obstinate blennor-

Externally it may be used with advantage in the dressing of sordid ulcers.

D. & M. OF ADM. Gr. xij. to ʒss. and even ʒj. in pills, or in a mixture, suspended either by means of mucilage, or the yolk of an egg.

BALSAM OF TOLU. *Tolutanum balsamum.* A juice exuding from the *Myrospermum peruiferam*, De Cand. A tree growing in South America, and nearly related to the preceding.

P. P. This substance is solid, of a soft, glutinous consistence, or dry and friable, according to its age; of a fallow or brown yellow colour, of a granulated or crystalline texture, semitransparent, of a warm and sweetish taste, and of a very fragrant odour.

C. P. It is composed, as all the substances properly called balsams are, of a resin and benzoic acid; it dissolves in six parts of alcohol, and partly in boiling water. It melts easily, and burns with a smoke of an agreeable odour.

TH. E. It is much more employed than the Peruvian balsam, and it possesses exactly the same properties. It is administered in the same cases as the Peruvian, and is often used to perfume stimulant and tonic mixtures.

D. & M. OF ADM. Gr.vj. to ʒss. in pills, or in an electuary, or else suspended in water by means of a mucilage or the yolk of an egg.——*Tinctura tolutani*, U. S. ——*Tinctura toluiferæ balsami*, E., P. (Balsam of tolu, ℥jss.; alcohol, Oj.) Dose, from ʒj. to ʒij.——*Syrup*, P. (Balsam of tolu, 1; water, 4; sugar, 8.)——*Syrupus tolutanus*, L., E. (Balsam of tolu, 1; boiling water, 6; sugar, 24.) Dose, from ʒij. to ℥j.

RESIN OR BALSAM COPAIBA. *Oleo-resina copaiba. Copaivæ*, seu *Cobaibæ balsamum.* A resin furnished by the *Copaifera officinalis*, Lin.; a tree growing in the same regions as the preceding.

B. C. A large bushy tree, with alternate leaves, composed of from five to eight folioles, shining, and almost sessile; flowers white, in ramose and axillary clusters; calix four-parted; no corolla; stamina distinct, spreading; fruit bivalve, containing one or two seeds.

P. P. Liquid, of an oily consistence, transparent, of a yellowish-white colour, of a strong and disagreeable smell, of an acrid, bitter taste, and of the specific gravity of 0.950.

C. P. Balsam copaiba, according to E. Durand's analysis, contains an essential oil, forming about one-half of its weight; a resin; a small quantity of acetic acid; a fatty matter; traces of muriate of lime, and of a sweet substance. It dissolves in twenty-five times its weight of alcohol at 35° of Baumé's areometer, leaving behind the insoluble fatty matter, which precipitates in the form of semi-fluid, transparent, yellowish globules, not soluble in any additional quantity of the same menstruum; but the whole of the copaiba dissolves in ether, pure alcohol, and in the essential oils. Copaiba, when perfectly pure, and mixed with one-seventeenth of pure calcined magnesia, acquires a degree of solidity sufficient to allow it to be formed into pills. This preparation requires six or eight hours to inspissate, and in time it becomes still more solid.

Th. E. This stimulating substance promotes digestion, when administered in small doses; but in large doses, it causes nausea, alvine evacuations, &c. When absorbed into the system, it acts principally on the mucous membranes, and especially on the genito-urinary organs, in the same way as the turpentines. It is employed with success in chronic catarrhs, in coughs with great expectoration, and in certain affections of the lungs unattended with inflammation. It proves successful in serous diarrhœa maintained by atony of the intestines, in obstinate leucorrhœa, &c. Balsam copaiba is principally used in order to reduce blennorrhagic discharges. It was formerly administered when the inflammatory symptoms had been abated; but Drs. Delpech and Ribes, have of late exhibited it at the outset of the disease, however great the inflammation; and they affirm having obtained the greatest advantages from its early employment. Dr. Velpeau, in order to obviate the inconveniences of this remedy when taken in large doses, has proposed to administer it in glysters, and numerous successful experiments leave no doubt whatever of the efficacy of this method.

D. & M. of Adm. Merely as a stimulant, gutt.x. to xx. two or three times a day, upon sugar or in an emulsion. In the treatment of blennorrhœa, from ʒij. to ʒiv. and even more, daily, in a mixture or pills. *Pills of solidified copaiba.* (Copaiba, ℥j.; pure calcined magnesia, ʒss.;) mix carefully and permit the mass to become solid; for four grain pills, two of which contain 15 drops of the liquid balsam. Dose. from one to three, three or four times a day. *Astringent mixture*, called *Chopart's mixture*, Paris H. (Balsam copaiba, syrup of marsh mallow, mint and orange flower waters, ãã. ℥ij.; gum Arabic and nitric acid, ãã. ʒj.) Cochl. ij. to iij. a day. *Astringent glyster*, Velpeau, (Balsam copaiba, ʒj. to ʒiv.; yolk of an egg, No. I.; gummous or marsh mallow water, ℥iv.)

Essential Oil of Copaiba, is obtained by distillation from the preceding article.

P. P. When pure, it is limpid, colourless, and marks 25° of Baumé's areometer; its specific gravity is 0.880; it is volatile, inflammable, it possesses a peculiar taste and smell, not unlike that of the oil of turpentine, but the taste is not so bitter and acrid. The impure oil is of a greenish-blue colour.

C. P. Cold alcohol dissolves one-twenty-fifth part of its weight, but more than double this quantity when it boils, part of which precipitates on cooling; sulphuric ether takes up about its own volume, and strong nitrous ether one-sixteenth of its weight; it mixes with alkalies, and does not redden the tincture of litmus, like the oil of turpentine. It does not affect potassium, and may, consequently, be considered as containing no oxygen; it seems to contain more carbon than the other oil of turpentine.

TH. E. This oil has been lately introduced into the French practice by M. Dublanc, jun., in the treatment of gonorrhœa. Drs. Bard and Cullerier witnessed its happy effects in thirty patients, whom they cured of this disease in five or six days. Several other physicians have exhibited it also with great success.

D. & M. OF ADM. From gutt.x. to xv. on a lump of sugar or suspended in a mucilage.——*Spiritus olei copaibæ*, DUBLANC. (Essential oil of copaiba, 1 part; rectified alcohol, 2 parts.) Distil.——*Mixture of spirit of oil of copaiba*, DUBLANC. (Syrup of tolu, ℥ij.; peppermint water, spirit of oil of copaiba, āā. ℥iij.; extract of opium, gr.j.)——*Emulsion of oil of capaiba*, DURAND. (Oil of copaiba, ʒij.; gum Arabic, ℥ss.; cinnamon water, ℥ij.; simple syrup, ℥jss.; tincture of opium, f.ʒss.) Dose, from 3 to 6 table spoonfuls a day.

Family Diospyreæ.

BENZOIN. ***Balsamum benzoinum*** seu ***Asadulcis***. A balsamic substance which exudes from the *Styrax benzoe*, Dryander, a tree growing in the island of Sumatra.

B. C. Trunk elevated, ramose, with a whitish bark; leaves alternate, striate, tomentose underneath, smooth on the upper surface; flowers in axiliary clusters, all on the same side of the common petiole; calix campanuliform; corolla, five obtuse and linear petals; ten stamina; fruit, a dry and globular berry.

P. P. There are two kinds of benzoin, namely, the *Amygdaloid benzoin*, which is in solid masses, made up of white tears united by a brownish paste, brittle, of an even and shining fracture; and the *benzoin in sorts*, the fracture of which is of a red brown, and of a uniform appearance. The smell of benzoin is aromatic and pleasant, its taste is warm and slightly acid, its specific gravity is of 1.092.

C. P. This substance, according to Bucholz, is composed of resin, 83.3; a matter analogous to balsam of Peru, 1.7; an aromatic principle, 0.5; benzoic acid, 12.5; impurities, lignous fibres, &c., 2. Warmed, it melts, decomposes, and pro duces white fumes of impure benzoic acid. It is entirely soluble in alcohol and ether; alkaline solutions separate from it the benzoic acid, water acts in the same way.

TH. E. Benzoin is a general stimulant, which is used in some cases of chronic catarrhs, to stimulate the lungs and facilitate expectoration; in atony of the digestive organs, in certain intermittent fevers. Inhaling the fumes disengaged from benzoin, placed on live coals, has been recommended to people afflicted with chronic pulmonary catarrhs. These fumes are likewise very useful in the treatment of indolent tumours; they are rubbed over the affected part, by means of woollen cloths impregnated with it.

D. & M. OF ADM. Gr.x. to ʒss.——*Tinctura benzoes*, P., A., DEN., PR. Dose from ʒss. to ʒj.——*Tinctura benzoini composita*, L., D., POL., PR. (Benzoin, ℥iij.; storax balsam, strained, ℥ij.; balsam of tolu, ℥j.; aloes, ℥ss.; alcohol, Oij.)—E. (Benzoin, ℥iij.; balsam of Peru, ℥ij.; hepatic aloes, ℥ss.; alcohol, ℔ij. Suspended in a mixture by means of a mucilage or the yolk of an egg.——*Syrupus benzoes*, P. (Benzoin, 1 part; boiling water, 4 parts; sugar, 8 parts.) Dose, from ʒij. to ℥j.
Externally. In fumigations, dry vapour baths, &c.

BENZOIC ACID. *Acidum benzoicum*, seu *Flores benzoes*. A proximate principle existing in all the balsams, and principally in benzoin.

P. P. This acid is solid. It crystallizes in opaque needles, very white, of a silky lustre, and very little ductile. Its smell is similar to that of benzoin, but this circumstance is owing to the presence of a small quantity of volatile oil, and it is almost impossible, in consequence of it, to obtain it perfectly inodorous. It has a sharp and slightly bitter taste, and its specific gravity is of 0.667.

C. P. It is composed of carbon, 74; oxygen, 20; hydrogen, 5. It is soluble in 22 parts of boiling, and in 200 of cold water; in 1 of boiling alcohol, and in 2 of the same liquid at the common temperature. It reddens litmus and combines with salifiable bases. It melts when heated, and produces an acrid, suffocating vapour.

PREP. It is obtained by heating benzoin in an earthen vessel, surmounted by a long pasteboard cone, with a hole at its summit; the acid condenses in the interior of the cone, in small white needles. It is purified by being dissolved in nitric acid, at 25° of Baumé's areometer for acids; by evaporating the liquor almost to dryness, dissolving again the residue in water, and causing this solution to crystallize.

TH. E. This acid possesses a very decided stimulant property; it is employed with advantage in chronic pulmonary catarrhs, to facilitate expectoration. It enters into the composition of several officinal preparations, and among the rest into the *Tinctura camphoræ composita*, L., and *Tinctura opii camphorata*, E.

SOLID STYRAX, OR STORAX. *Balsamum storax*. *Styrax* *calomita.* Balsam furnished by the *Styrax officinalis*, Lin., a tree nearly related to the preceding, and growing in the Levant and in the south of Europe.

B. C. Trunk from fifteen to twenty-five feet high; leaves alternate, oval, white, and tomentose underneath; flowers white, in bunches of three or four at the extremity of the branches, resembling those of the orange tree; from ten to sixteen stamina; fruit, of the size of a cherry, dry, with a single cell containing from two to four seeds.

P. P. We meet in commerce with two sorts of styrax, 1st, the *Styrax in tears*, which is in red, transparent, brittle grains, having a resinous, shining fracture, becoming soft betwen the fingers, having a strong smell of benzoin, and an acrid, bitter taste; 2d, the *Styrax in lumps*, is in masses of the same size as the preceding; brittle, smooth, of a reddish-brown colour, and mixed with saw-dust and other impurities. Its colour and taste differ but little from the former.

C. P. It contains, like the other balsams, benzoic acid, resin, and an empyreumatic oil. It dissolves in alcohol and ether. Boiling water takes up its aroma and taste.

Th. E. It was once very much employed as a stimulant in chronic pulmonary diseases. It is now almost discarded. It enters into some officinal preparations. Externally it is used as a stimulating topical remedy, and in fumigations.

D. & M. of Adm. Gr.x. to ʒss.——*Pilulæ a styrace*, D. (Styrax, 3 parts; opium and saffron, āā. 1 part.) Dose, gr. iij. to vj.

Liquid Styrax. *Styrax liquidus* is furnished by the *Liquidambar styraciflua*, a tree of the family *Amentaceæ*, which grows in America. It is liquid, opaque, of a greenish-gray colour, of a less agreeable smell than that of storax, and of an aromatic and acrid taste. It contains a great quantity of benzoic acid, and it dissolves almost entirely in boiling alcohol. It is but little used at present, except externally. It is one of the ingredients of the *Compound styrax ointment*, P. (Liquid styrax, 5 parts; walnut oil, 10 parts; colophony, 12 parts; resin elemi and yellow wax, āā. 4 parts.)

Labdanum or Ladanum is a gum-resin, produced by the *Cistus creticus* Lin., a shrub belonging to the family Cisteæ. It is in solid, cylindrical, flattened, and spiral pieces, of a gray colour, of an aromatic odour and agreeable taste. It possesses stimulant properties. It enters into the composition of several officinal preparations.

Poplar Tree Buds, *Gemmæ populi*, furnished by the black poplar tree, *Populus nigra*, Lin., are oblong, pointed, of a yellowish green, and covered with a resinous matter of an aromatic smell. They are only used in the preparation of the *Populeum ointment*, P. (Poplar tree buds, 25; green leaves of poppy, of belladonna, of hyosciamus, and of the garden nightshade, āā. 6; axungia, 75.)

Family Araliaceæ.

Prickly-ash. Toothache Tree. *Zanthoxylum fraxineum*. Willd. A tall shrub, indigenous to the southern states of North America.

P. U. The bark and capsules.

B. C. Stem straight, furnished with numerous prickles, from ten to fifteen feet high; leaves pinnate; folioles oval-lanceolate, sessile, serrulate, and almost entire; common petiole unarmed; umbels axillary; flowers, perianthe five-parted; stamina, three, five, and six; pistils three to five; capsules three to five, containing each one seed. When rubbed with the fingers, they impart an odour similar to that of lemon oil.

P P. Bark thin, gray externally, yellowish-white internally; taste pungent, aromatic, and exciting a copious discharge of saliva.

C. P. Dr. Staples, an American physician, has obtained from this bark a crystalline substance analogous to piperine, united to an oil possessing all the aroma, acridity, and warmth of the bark.

Th. E. This bark possesses very energetic, stimulant, and diaphoretic properties, analogous to those of mezereum bark. It is a popular medicine in America, often exhibited in regular practice as a remedy in chronic rheumatism and syphilis. It is said that, by an internal and protracted use, it has, in several instances, produced salivation. It is recommended in malignant ulcers, both as an internal and external remedy, and several cases in testimony of its efficacy, in this respect, are related in the Medical and Physical Journal, and in the Transactions of the London Medical Society. The *powder* is given in doses of ten, twenty, and even thirty grains. *Decoction* (one ounce of bark to a quart of water, boiled down one-third), taken in doses of two or three ounces, every two or three hours. The tincture of the bark and capsules is a popular drink in chronic rheumatism.

Small Spikenard. False Sarsaparilla Root. *Aralia nudicaulis*, Lin. A perennial herbaceous plant, growing in shady and rocky woods, and in a rich soil, from Canada to Carolina, in North America.

P. U. The root.

B. C. Stem naked, straight, bearing three umbels without involucrum; the stem and a single leaf rising together, about two feet high; flowers in simple umbels; calix superior, five-toothed; petals entire; five stamina; ovary inferior, surmounted by five styles and stigmas; fruit, a five-celled and five-seeded berry, crowned by the calix and styles.

P. P. Root sometimes many feet long, yellowish-brown, cylindrical, of the size of the little finger, fragrant, possessing a warm, aromatic, and sweetish taste.

TH. E. This root is extensively used by American country practitioners, and it has acquired a great reputation as a substitute for sarsaparilla, in rheumatic and syphilitic affections, &c. It is also a useful tonic in a relaxed state of the stomach, with loss of appetite. It is used precisely in the same way as sarsaparilla, and is said not to be inferior to that article.

GINSENG. *Panax quinquefolium*, Lin. A perennial plant, indigenous to China and Japan, and growing in North America.

P. U. The root.

B. C. Stem erect, terete, green below, tinged with purplish red towards the top, where arise three divergent petioles, each bearing a ternate or quinate leaf, with petiolate, oval, acuminate, and dentate folioles; flowers small, white, in a globose umbel, on a peduncle at first short, but afterwards elongated; this peduncle is situated in the centre of the fork produced by the union of the petioles with the top of the stem; corolla, five oval fugacious petals; stamina five, crowned with heart-shaped anthers; pistils one, two, or three styles; fruit, a berry of a fine vermilion colour, commonly reniform, with an apex or crown.

P. P. Root fusiform, from three to four inches in length, of a whitish-yellow colour, wrinkled transversely; its taste is pleasant, consisting of a mixture of sweet and bitter, together with some aromatic pungency.

C. P. It contains a great proportion of starch and gum in combination with its more active principles. Water and alcohol dissolve the latter properties.

TH. E. The medicinal properties of the ginseng have not been found to justify the high esteem in which the Chinese hold it. This substance has so very little activity, that if it deserves at all a place in the materia medica, it is only among the demulcents.

CHAPTER VII.

ON SPECIAL STIMULANTS, OR THOSE WHOSE ACTION IS MORE PARTICULARLY DIRECTED TO ONE OR MORE ORGANS.

THE substances of which we are going to treat under this head vary considerably in their physical and chemical properties, as well as in their action upon the animal economy. We shall therefore divide them into five classes, viz.

1st. Those acting upon the secreting vessels of the kidneys.

2d. Those which act upon the cutaneous system.

3d. Those, the action of which is directed to the organs of generation.

4th. Those acting upon certain glands, and modifying the phenomena of absorption.

5th, and lastly. Those which exercise their influence upon the nervous system.

§ 1. REMEDIES ACTING SPECIALLY ON THE SECRETING VESSELS OF THE KIDNEYS, OR DIURETICS.

Amongst the remedial substances which have been mentioned in the preceding chapter, there are several which seem to stimulate the kidneys and the mucous membranes of the genito-urinary organs more powerfully than any other parts of the economy, and which impart to the urine a peculiar smell; but as their stimulant action is evinced, at the same time, very evidently on the whole economy, we have not thought it proper to separate them from the other general stimulants, but have confined ourselves to the arranging of them together at the end of the preceding chapter, as introductory to the study of those of which we are now going to treat.

Diuretics (διουρεω, I urinate), act upon the general system in the same manner as stimulants, but they differ from them by reason of the direct influence which they exercise on the renal organs. In fact, although they stimulate but slightly the other organs, and though they be administered in the solid state, they act in a peculiar manner upon the kidneys, and increase or modify the secretion of urine. This result bears no proportion to the general excitation which they produce, and seems to be altogether independent of it. Thus urea increases considerably the secretion of urine, without exercising, at the same time, any very marked action on the rest of the economy. It is, therefore, proper to acknowledge a class of remedies truly *diuretic*, without admitting among them such substances as do not exercise a direct and special influence on the secretion of urine; and we must not apply this term, as was formerly done, to all those substances which are capable of promoting in an indirect manner this secretion, whatever their action might be on the economy. This improper classification was carried so far, that tonics, stimulants, emollients, &c. were ranked in that class, only because their action was sometimes followed by diuresis.

The diuretic remedies are furnished by the three kingdoms of nature, and possess no peculiar physical or chemical character in common. They are generally administered in solution, in a large quantity of aqueous menstruum, in order to assist their action by increasing the mass of fluid in circulation. Finally, it is princpally in dropsies, gout, certain affections of the urinary passages, &c. that their employment is resorted to, as we shall notice in the history of each [*].

DIURETIC ANIMAL SUBSTANCE.

UREA. *Urea* is a proximate principle contained in the urine of a great number of animals.

P. P. This substance is in long, needle-shaped, and prismatic crystals, or in colourless, thin, shining, elongated, transparent, inodorous, scales; of a cool, sharp taste, and of a greater specific gravity than water.

C. P. Urea, according to Bérard, is composed of oxygen, 26.40; nitrogen, 43.40; carbon, 19.40; and hydrogen, 10.80. It is unalterable in the air, and very soluble in water and alcohol. Thrown on live coals, it produces white vapours possessing a strong odour of ammonia.

PREP. Urine, concentrated to a syrup-like consistence, is treated with nitric acid, and the precipitate, which is a pernitrate of urea, is decomposed by the sub-carbonate of potassa. The liberated urea is then dissolved in alcohol, and the liquor is permitted to crystallize.

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[*] Diuretics furnish one of the best examples of the special action of remedies, or the relation subsisting between certain properties, called medicinal, with which some substances are endowed, and particular organs in the animal body. It is probable that all remedies act in an analogous manner, namely, by modifying the vital condition of the organs with which they bear any relation. The classification of the present work is founded upon that assumption; and the more we consider the subject in a physiological and therapeutical point of view, the more satisfied we shall become of the truth of such an assumption.—EDITOR.

M. Henri, not being satisfied with the small product obtained by the above process, devised the following, which yields a larger quantity. By adding to fresh urine a slight excess of sub-acetate of lead a precipitate is formed, consisting of oxide of lead united to the various acids of the urine, together with the mucus and a great part af the animal matter, the decanted liquid is then treated with sulphuric acid in slight excess, to separate the lead, and afterwards in the progress of the evaporation, to decompose the acetates of soda and lime which may have formed. After having separated the white precipitate, concentrate rapidly over a steady fire, adding a portion of animal charcoal during the ebullition. When the whole has become a clear syrup, pass it through a linen of close texture, and then reduce it one third by evaporation. On cooling, the liquid is converted into a yellow mass, crystallized in needles, formed of a great proportion of urea and some salts. The crystals being drained and pressed, are added to those obtained from the mother-waters treated in a similar manner. They are next treated with a very small quantity of carbonate of soda, with a view of separating any remaining acetate of lime, and then digested in alcohol of 38° to 40°. The alcoholic solution being filtered, and the alcohol separated by distillation, the urea remains, which may be crystallized anew from water, if necessary. The urea, as thus obtained, is in silky or prismatic needles, very soluble, and of a cooling taste.

Th. E. Dr. Segalas's experiments prove that this substance acts in a special manner on the kidneys, and promotes the secretion of urine, without exercising an appreciable influence on any other part of the economy. He has consequently administered it as a powerful diuretic, and in many cases with success; and Dr. Fouquier, who has exhibited it at the hospital of *La Charité*, has obtained satisfactory results.

D. & M. of Adm. Dose, from gr.xv. to ℈j., and even more, but progressively, dissolved in sweetened distilled water.

DIURETIC MINERAL SUBSTANCES.

Sub-carbonate of Potassa. *Potassæ sub-carbonas*. A salt. found in large quantities in the ashes of woody vegetables, and forming the base of the potash of commerce.

P. P. It is solid, white, deliquescent, inodorous, of an acrid and caustic taste, and crystallizes in rhomboidal scales.

C. P. This salt is composed of carbonic acid 146.5, and potassa, 100. It is very soluble in water, effervesces with acids, which decompose it, and liberate from it the carbonic acid; heated it melts, above red heat without decomposing. It turns the syrup of violets green.

Incomp. Subst. Concentrated acids, lime water, sulphates of magnesia, of zinc, of copper, and of iron; alum, the hydrochlorates of ammonia, of iron, of mercury, nitrate of silver, tartrate of antimony and potassa; acetate of copper, &c.

Prep. It is obtained, by burning, in a brass basin, almost red hot, a mixture of one part of nitrate of potassa, and two of impure cream of tartar.

Th. E. The sub-carbonate of potassa, administered internally, in large doses, in the solid state, or even in a concentrated solution, is a very energetic corrosive poison. In small doses, and in a suitable menstruum, it causes at first an irritation of the intestinal mucous membrane, capable of producing a purgative effect, and afterwards an increase of the secretion of urine. This last effect is very remarkable, even when it is administered in the dry state, and is followed neither with acceleration of the circulation, nor with an increase of heat, or any other general phenomena characteristic of a stimulant medication. It never provokes the menses nor diaphoresis; from hence we may conclude, that this salt being absorbed, and moving with the circulatory fluids, exercises a special influence on the kidneys.

It is employed in passive dropsies, gout, visceral engorgements, scrofula, &c. It is likewise administered in cases of gravel, calculi of the bladder. (See Pure Potassa.) It is employed also in the preparation of saline effervescent draughts, frequently used in certain disorders of the digestive functions, in bilious fevers, in spasmodic vomiting, &c.

D. & M. of Adm. Gr.x. to ʒj. in a mucilaginous menstruum, or in white wine. ——*Liquor sub-carbonatis potassa*, L. (Sub-carbonate of potassa, ℔ij.; distilled water, f.℥xij.) Dose, from gutt.x. to ʒj., in a suitable vehicle.——*Liquor kali carbonatis*, Pol. (Sub-carbonate of potassa, 1 part; distilled water, 2 parts.) ——*Liquor carbonatis potassæ*, R. (Sub carbonate of potassa, 1 part; water, 3 parts.) Dose, from ℈j. to ʒj.——*Julepum potassæ sub-carbonatis*, Guy's H. (Solution of sub-carbonate of potassa, ʒvj.; mint water, ℥viijss.) Dose, from ℥ss. to ℥j., two or three times a day.——*Julepum salinum*, Guy's H. (Julep of sub-carbonate of potassa, ℥viij.; lemon juice, ℥iv.) Dose, ℥j., every five or six hours. ——*Solutio sub carbonatis potassæ*, New York H. (Sub-carbonate of potassa, ℥ss.; water, f.℥vi.)——*Solutio potassæ citratis*, New York H. (Solution of sub-carbonate of potassa; lime juice, āā. equal parts, or in such proportions as to neutralize the mixture.)——*Haustus salinus*, Guy's H. (Julep of sub-carbonate of potassa, ℥j.; lemon juice, and mint water, āā. ℥ss.; tincture of colombo, ʒss.) for a dose.——*Rivière's anti-emetic mixture*, P. (Sub-carbonate of potassa, 1 part; lemon syrup, 16; lemon juice, 8; water, 48.)

Externally. *Alkaline pediluvium*, Paris H. (Sub carbonate of potassa, ℥viij.; warm water, as much as necessary.)

NEUTRAL CARBONATE OF POTASSA. *Potassæ carbonas.* It does not exist in nature.

P. P. It is white, crystallizes in rhomboidal prisms with dihedral summits; inodorous, with a weak alkaline taste.

C. P. This salt contains twice as much carbonic acid as the preceding article. It is unalterable in the air, soluble in four parts of water at 15° Centig. (59° of Fahr.), and is partly decomposed by boiling water. Heat transforms it into a sub-carbonate. It turns the syrup of violets green, and it effervesces with acids.

PREP. By forcing, by means of a pump, carbonic acid gas into a concentrated solution of sub-carbonate of potassa, until crystals of carbonate begin to form.

TH. E. It possesses the same virtues as the preceding, without having its causticity. It ought, of course, to be used in preference. The large quantity of carbonic acid it contains, and which it yields with facility, renders it more suitable than the sub-carbonate for the preparation of effervescent draughts.

D. & M. OF ADM. The same as those of the preceding. *Effervescent draught.* Dr. PARIS. (Carbonate of potassa, gr.x.; camphorated mixture, ℥j.; lemon juice, ℥ss.) *Effervescent julep*, Dr. PARIS. (Carbonate of potassa, gr.x.; emulsion of almonds, ℥j.; syrup of red poppies, ʒj.; lemon juice, ʒiv.)

NITRATE OF POTASSA. *Potassæ nitras.* Nitre. Saltpetre. This salt is found in large quantities in nature, especially in the East Indies, in Spain, the kingdom of Naples, and in old walls, on the surface of which it effloresces.

P. P. It crystallizes in hexahedral prisms, often fluted; is white, transparent, unalterable in the air. Nitre is inodorous, of a cool and sharp taste, followed by a slightly bitter after-taste. Its specific gravity is 1.933.

C. P. Nitrate of potassa is composed of nitric acid 53.45, and potassa 46.55. It dissolves in five parts of cold and in its own weight of boiling water. It is insoluble in alcohol. It melts at a moderate heat, and on cooling it forms a white, opaque mass, called *sal prunella.* It decomposes at a red heat, and fuses on live coals, causing them to burn more rapidly.

INCOMP. SUBST. Sulphuric acid, alum, the sulphates of magnesia, iron, zinc, and copper.

PREP. Treat with water the compost formed of putrid materials, in order to dissolve the nitrates of potassa, of lime, and magnesia, and the hydro-chlorates it contains; then pour into this liquor a solution of sulphate of potassa, which transforms the nitrates of lime and magnesia into nitrate of potassa; decant and concentrate the liquor, and set it to crystallize. In order to purify the nitre thus obtained, it must be washed with water saturated with nitrate of potassa.

Th. E. In large doses this salt produces a lively irritation of the gastro-intestinal surface, with nausea, vomiting, alvine evacuation, and serious accidents. Administered in small doses, it seems to exercise a special influence on the quantity of the secretion of urine. The partisans of the *contra-stimulus* doctrine do not consider nitre as a diuretic. They maintain, and it is likewise the opinion of Dr. Alexander, of Edinburgh, that this salt, taken in small doses, slackens the circulation, diminishes the animal heat, and, in short, acts as the *Digitalis purpurea*. Indeed, they exhibit it in order to abate inflammations, and principally those of the internal organs, &c. The nitrate of potassa is administered as a temperant and a diuretic in the second period of acute inflammation of the urinary passages, in serous effusions, in inflammatory fevers, in certain cases of icterus, in rheumatism, &c. Externally it is employed in gargles and cooling lotions.

D. & M. of Adm. As a diuretic, from gr.vj. to xx. in ℔j. of mucilaginous drink. As a stimulant, from gr.xij. to ʒj. and even ʒij. as a contra-stimulant. *Stahl's temperant powder*, P. (Nitrate and sulphate of potassa, āā. 9; red sulphuret of mercury, 2.)——*Pulvis nitrosus temperans*, Pr., R. (Nitrate and sulphate of potassa, āā. e. p.)——*Pulvis refrigerans*, Den. (Nitrate of potassa and oleo-saccharum of lemon, āā. 1; tartrate of potassa, 6.) Dose, from ℈j. to ʒss.——*Aperitive mixture*, Paris H. (Nitrate of potassa, ℈j.; decoction of the aperient roots, ℥v.; syrup, ℥ij.) Dose, one table-spoonful.——*Mixture of nitrate of potassa*, Paris H. (Nitrate of potassa, gr.xviij.; decoction of dog-grass root, ℥iv.; syrup, ℥ij.——*Emulsion of nitrate of potassa*, Guy's H. (Nitrate of potassa, ʒj.; emulsion of almonds, ℔j.——*Trochisci nit. pot.* E. (Nitrate of potassa, 1; sugar, 3.) Dose, No. 1 to 2 every two or three hours.——*Julepum potassæ nitratis*, Guy's H. (Nitrate of potassa, alcoholized nitric acid, āā. ʒiij.; syrup of lemon, ʒiv.; mint water, ℥xss.) Dose, ℥j. three, four, or six times a day.——*Gargarisma potassæ nitratis*, New York H. (Barley water, 0j.; nitrate of potassa, ℥vj.; honey, ℥ij.)

Acetate of Potassa *Potassæ acetas*. This salt is found in the sap of almost all vegetables.

P. P. It is in the form of small white, brilliant scales, extremely deliquescent, of a sharp taste, and of a weak but peculiar odour. Its specific gravity is 2.10.

C. P. It is very soluble in alcohol. Heat decomposes it, and deprives it of its acid, which is disengaged.

Incomp. Subst. Most acid fruit, acids, and a great number of salts.

Prep. Saturate a solution of sub-carbonate of potassa with distilled vinegar, and evaporate the liquor to dryness.

Th. E. In small doses, the acetate of potassa is diuretic, and is therefore employed to fulfil the same indications as the preceding substances, especially in, dropsies, icterus, &c. In large doses it is a very gentle cathartic, but very little used for this purpose.

D. & M. OF ADM. As a diuretic, from ℈j. to ʒj. in solution, several times a day. As a cathartic, from ʒiv. to ℥j. and above.——*Liquor kali acetati*, PR., B. R., POL., DEN. (Acetate of potassa, 1; distilled water, 2.) Dose, from ʒj. to ʒij. in a mixture.—— *Diuretic mixture*, PARIS H. (Acetate of potassa, ʒij.; vinegar syrup, ℥j.; cinnamon water, ʒj.; infusion of lime tree flowers, ℥iv.) Dose, a table-spoonful.

SUB-CARBONATE OF SODA. *Sodæ sub-carbonas.* Mineral alkali. It exists in the ashes of almost all vegetables growing on the sea shores, and especially in those of the *Salsola Soda*, Lin. It is also contained in the waters of some lakes, but in an impure state and mixed with other salts.

P. P. It is white, crystallized in rhomboidal prisms with truncated summits, efflorescent, inodorous, of an acrid taste, and slightly caustic.

C. P. It is composed of carbonic acid 100, and soda 141.39; it contains 62.69 per cent. of water of crystallization. It is soluble in two parts of cold, and in a less quantity of boiling water. It turns the syrup of violet green, undergoes the aqueous and ignited fusion without decomposition, and effervesces with acids.

INCOMP. SUBST. The same as for the sub-carbonate of potassa.

PREP. Treat the soda of commerce with cold water, evaporate the liquor to dryness, expose the résidue for a fortnight to the air, dissolve anew in water and let the solution crystallize.

TH. E. Its employment is the same as that of the sub-carbonate of potassa, but it is more frequently exhibited, because it is not caustic. It is preferred to the latter in cases of acidity of the stomach, in dropsies, scrofulous diseases, and hooping-cough. In small doses, and diluted in water, it proves a diuretic.

D. & M. OF ADM. Dose, from gr.x. to ʒss. in the solid state united with bitter extracts.——*Pilulæ sodæ*, GUY'S H. (Sub-carbonate of soda, ʒiij.; medicinal soap, ʒj.; essential oil of caraway, gutt.x.; water, q. s.) Dose, from gr.x. to ʒj. two or three times a day.—— *Sodæ sub-carbonas exsiccatus*, L., D., U. S. Dose, from gr.x. to gr.xv.——*Pilulæ sodæ sub-carbonatis*, NEW YORK H. (Effloresced soda, ʒiij.; soap, ℥ss.) For four grain pills.

CARBONATE OF SODA. *Sodæ carbonas.* It does not exist in nature.

P. P., C. P., and PREP. (See Carbonate of potassa, p. 212.)

Th. E. This salt possesses the same properties as the carbonate of potassa; it is, however, more efficacious. It has been of late very much used in the treatment of calculous affections, when produced by a superabundance of uric acid. In small doses it facilitates digestion, and restores in a very short time the functions of the stomach, especially when they have been disturbed by the formation of too great a quantity of acid. M. Darcet, who has called the attention of practitioners to this substance, thinks that it acts chemically by uniting with the acid contained in *primæ viæ*.

D. & M. of Adm. Gr.xij. to ʒss. in an aqueous menstruum. *Digestive lozenges*, F. M. (Carbonate of soda, 5; white sugar, 95; mucilage of gum tragacanth, q. s.; essential oil of mint, 3; for 18 grain lozenges, each of which contains one grain of carbonate.) Dose, No. ij. to iv. several times a day, before and after meals. *Soda powders.* (Carbonate of soda, ʒss.; tartaric acid, gr.xx.; in separate papers.

Acetate of Soda. *Sodæ acetas.* It is always the product of art.

P. P. This salt crystallizes in long flattened prisms; is white, unalerable in the air, of a sharp, bitter taste.

C. P. It dissolves in three parts of cold, and in a less quantity of boiling water; it is hardly soluble in alcohol. Heated, it melts in its water of crystallization, and decomposes at a high temperature by yielding its acetic acid. The crystals contain one-third of their weight of water of crystallization.

Prep. Saturate some sub-carbonate of soda with distilled vinegar.

Th. E. The same as those of the acetate of potassa; but it appears to be less active, and is much less employed than acetate of potassa.

D. & M. of Adm. From ʒij. to ℥ss. in a watery menstruum.

Medicinal or Amygdalate Soap. *Sapo medicinalis. Sapo ex soda amygdalinus.* It is the product of the combination of oil of sweet almonds and soda.

P. P. It is solid, white, somewhat consistent, of an agreeable smell, of a slightly alkaline taste, and of a greater specific gravity than water.

C. P. This substance is composed of oleate, margarate, and stearate of soda. It is very soluble in water, alchol, and ether; heated, it melts, puffs up, and decomposes; exposed to the air, it loses some of its weight, dries up, and is altered in quality.

Incomp. Subst. Acids; all the soluble salts, except those having for base soda, potassa, and ammonia, and tannin substances.

Prep. Let 210 parts of oil of sweet almonds act upon 100 of solution of soda, at 36° of Baumé's areometer for salts; agitate the mixture and pour it into moulds when it has acquired the consistence of butter.

Th. E. Taken internally, soap stimulates the digestive organs, and seems to act principally as a diuretic, without, however, accelerating the circulation. Its employment, when too long continued, debilitates all the tissues; for it produces general paleness, swelling, or emaciation, debility, passive hæmorrhage, and other symptoms of atony. It is exhibited in cases of induration, or engorgement of the abdominal viscera, scrofulous tumours, gout, jaundice, calculus billiaris, habitual constipation, &c. Like the other alkaline preparations, it is recommended in gravel, and its employment may be very advantageous. Soap water is very useful in cases of poisoning by acids, in order to neutralize these substances. Finally, soap enters into the composition of a great number of pilulary masses. This remedy is employed externally as a stimulant in glandulous obstructions, indolent tumours, &c.

D. & M. of Adm. From gr.x. to ʒj. in pills.——*Pilulæ saponis*, P. (Amygdalate soap, 125; marsh mallow root, 16; nitrate of potassa, 4.) Dose, from gr. [illegible] to ℈ij.——*Pilulæ aloeticæ*, E., U. S. (Socotorine aloes and medicinal soap, in equal parts.)——*Pilulæ saponis cum opio*, L. (Pulverized opium, ʒss.; hard soap, ℥ij.) for three grains pill. *Compound soap pills*, Paris H. (Medicinal soap, gr. [illegible] calomel and resin of jalap, āā. 1.)——*Sapo jalapinus*, B., Pr., Pol. (Amygdalate soap and resin of jalap, āā. equal parts; alcohol, as much as necessary to form a mass.) Dose, from gr.vj. to x.

Externally. Dissolved in water or alcohol, in lotions, fomentations, frictions, &c.——*Linimentum saponis compositum*, U. S. (White soap, ʒxij.; camphor, ℥[illegible]; oil of rosemary, f.ʒij.; alcohol, Cj.—L. (Hard soap, ℥iij.; camphor, ℥j.; spirit of rosemary, 0j.——*Tintura saponis camphorata*, vulgo *Linimentum saponaceum*, F. (Hard soap, ℥iv.; camphor, ℥ij.; oil of rosemary, ℥ss.; alcohol, ℔ij.——*Linimentum saponis cum opio*, U. S. (Compound liniment of soap, U. S. Cj.; opium, ℥[illegible]—New York H. (Compound soap liniment, L., f.℥jss.; tincture of opium, f.℥[illegible]——*Tinctura saponis et opii*, E. (Camphorated tincture of soap, E., ℔jss.; opium, ℥j.)——*Spiritus saponatus*, A. (Medicinal soap, 24; sub-carbonate of soda, 1; spirit of lavender, 48; alcohol, 144.)——*Saponaceous lotion*, Paris H. (Medicinal soap, 2 parts; alcohol, 16 parts.)——*Ceratrum saponis*, L., U. S. (Hard soap, ℥viij.; yellow wax, ℥x.; semivitreous oxide of lead, ℔j.; olive oil, Oj.; vinegar, Cj.)——*Emplastrum saponis*, L., D. (Hard soap, ℔ss.; lead plaster, ℔iij.)—E. (Semivitreous oxide of lead, 4 parts; gum plaster, 2 parts; soap sliced, 1 part.)—P. (Medicinal soap, 12 parts; wax, 10 parts; simple plaster, 200 parts; water, as much as necessary.)——*Emplastrum saponatum*, Pr., Pol., B., R. (Medicinal soap, 6; wax, 12; camphor, 1; simple plaster, 72.)

DIURETIC REMEDIES FURNISHED BY THE VEGETABLE KINGDOM.

Family Liliaceæ.

Squill. *Scillæ* seu *Squillæ radix*. *Scilla maritima*, Lin. A plant growing on the sea shore.

P. U. The scales of the bulb.

B. C. Ovoid bulb of the size of the fist, formed of numerous scales, brown externally; thick, fleshy, and viscous internally; radical leaves oval, lanceolate, of a deep green colour; scape from two to three feet high; flowers white, pedunculate, in a terminal spike; corolla, six spreading petals; stamina with simple filaments; fruit, a three-sided capsule with three cells.

P. P. The scales of squill are found in commerce in a dry state, and in wrinkled, irregular, and brownish slips, of a weak smell, and of a very acrid and bitter taste.

C. P. This substance contains, according tô Mr. Vogel, *scillitine*, 35; tannin, 24; gum, 64; lignine, 30; and traces of saccharine matter and of citrate of lime.

Scillitine, a proximate principle discovered by Vogel, is white, brittle, transparent, friable, deliquescent, very soluble in water, alcohol, and vinegar. This seems to be the active principle of squill. M. Tilloy says, that this substance is a mixture of an uncrystallizable sugar and two peculiar matters, the one acrid and the other very bitter.

Th. E. The direct action of squill on the stomach provokes nausea, vomiting, and colics; but when absorbed, its influence is felt by the kidneys, and it produces an increased secretion of urine, or even strangury and emission of bloody urine. It exercises likewise a very decided stimulant action on the secretion of the mucous membranes, and more especially on those of the bronchi. In large doses it acts on the nervous system like the acrid poisons, and produces convulsions, &c. It seems also to diminish the frequency of the pulse.

It is principally as a diuretic and a general excitant that this substance is exhibited, in dropsies, and in cases in which it is necessary to promote the secretion of urine. It is likewise recommended in the last stage of pulmonary catarrhs and chronic coughs, in order to facilitate expectoration. Finally, administered in such a manner as to produce continual nausea, it may become efficacious in the treatment of certain tubercular affections. Squill is seldom administered alone; it is frequently associated with opium, calomel, and other energetic remedies, according to the indication to be fulfilled.

D. & M. of Adm. Powder, from gr.ij. to gr.x. in pills.——*Pilulæ scillæ*, U. S. (Squill, ʒj.; castile soap, gr.xxiv.) for 40 pills.——*Pilulæ scillæ compositæ*, L. (Squill, ʒj.; ginger, hard soap, ãã. ʒiij.; ammoniacum, ʒij.)—D. (Squill, ʒj., ginger, ʒij.; oil of aniseed, gutt.x.)——*Pilulæ scilliticæ*, E. (Squill, ℈j.; ammoniacum, cardamon seeds, extract of liquorice, ãã. ʒj.)—P. (Squill, 1 part; gum ammoniac, 3 parts.)—Den. (Squill, swallow-wort root, and gum ammoniac, ãã. 4 parts; medicinal soap, 8 parts; balsam copaiba, 1 part.)——*Bolus of squill*, Paris H. (Squill, gr.vj.; sulphate of potassa, gr.ij.; oxymel of squill, a sufficient quantity;) twice a day.——*Pilulæ scillæ cum hydrargyro*, New York H. (Squill, ʒiij.; calomel. ʒj.; syrup, q. s.)—Guy's H. (Mass of compound squill pill, L., ʒiv.; gray oxide of mercury, ℈j.;) for forty pills. Dose, No. 3 twice a day.—*Dr. Paris's expectorant pills.* (Squill, ʒjss.; extract of hyosciamus, ℈ij.;) for [illegible] pills.——*Pulvis scillæ compositus*, F. (Squill, 1 part; tartrate of potassa, 4; nitrate of potassa, 3; aromatic powder, 2.) Dose, from gr.x. to xx.—Guy's H. (Squill, 1; tartrate of potassa, 9.) Dose, from gr.xx. to xxx.——*Diuretic powder*, Dr. Paris. (Squill, gr.iij.; opium, gr.ss.; cinnamon, gr.x.;) Dose, two a day.—*Expectorant powder*, Paris H. (Squill, gr.xii.; ipecacuanha, ℈j.) In [illegible] doses.——*Tinctura scillæ*, L., D., P. (Squill, ℥iv.; alcohol, Oj.)—E. (Squill, ℥iv.; proof spirit, ℥xvj.) Dose, from ♏xx. to ♏xxx.——*Vinum scilliticum*, F. (Squill, 1; Malaga wine, 16.) Dose, from ℥ss. to ℥j., in any menstruum.—*Acetum scillæ*, U. S. (Squill, ℥ij.; vinegar, Oijss.; alcohol, f.℥iij.)—L., D. (Squill, ℔j.; distilled vinegar, Ovj.; proof spirit, Oss.)—E. (Squill, ℥j.; vinegar, ℥xv.; alcohol, ℥jss.)—P., Den., F. (Squill, 8; vinegar, 96; alcohol, 1.)—Pol., Pr., B. (Squill, 2; vinegar, 12; alcohol, 1.)—R., A. (Squill, 1; vinegar, 6.)——[illegible] *scillæ acetatum*, L., D., U. S. (Clarified honey, ℔iij.; vinegar of squill, Oij.)—P., Den., Pol., Pr., R., B., F. (Vinegar of squill, 1 part; honey, 2 parts.) Dose, from ʒiv. to ℥j. in a mixture or in a suitable menstruum.——*Diuretic mixture*, Paris H. (Oxymel of squill, 8; mint water, 16; infusion of wall pellitory, 64; spirit of nitre, 1.)——*Mel scillæ*, P. (Squill, 1; water, 24; honey, 12.)——*Syrup scillæ*, E., U. S. (Vinegar of squill, Oij.; sugar, ℔iijss.) Dose, from ʒj. to ʒij. in an aromatic mixture.——*Syrupus scilliticus*, F. (Squill, 2; ginger, 1; hyssop, 4; mint water, 48; simple syrup, ʒij. to ℥ss.)

Family Asparagineæ.

Asparagus. *Radix asparagi. Asparagus officinalis*, Lin. A perennial indigenous plant, cultivated for culinary purposes.

P. U. The root and young shoots.

B. C. Stem straight, cylindrical, smooth; leaves capillary, fasciculate; flowers small, of a greenish yellow, unisexual; leaves campanulate, style trigonal, three stigmas; fruit, pisiform and three-celled berries.

P. P. The root is scaly, cylindrical, fleshy, giving birth to numerous cylindrical radicles, very long, of the size of a quill, of a gray colour externally, white internally, of a mucilaginous and bitter taste.

C. P. This plant contains, according to Messrs. Vauquelin and Robiquet, *asparagine*, a green resinous matter, wax, albumen, phosphate and acetate of potassa, and mannite. Its active principles are soluble in water.

Asparagine, is solid, hard, white, in rhomboidal prisms, of a nauseous taste, and inodorous. It is partly soluble in water, and insoluble in alcohol.

Asparagus root communicates to urine a very disagreeable smell, and seems to promote this secretion without acting in an appreciable manner on the rest of the economy. Not only the root, but the whole plant possesses these properties, which seem to depend upon the asparagine. It may be used as a diuretic in dropsies, diseases of the urinary passages, and in general in all cases in which an increase of the secretion of urine is indicated, without producing great excitation in the organs.

D. & M. OF ADM. *Decoction*, ℥ss. to ℥j. to ℔ij. of water.

Family Ericineæ.

BEAR'S BERRY. BEAR'S WHORTLEBERRY, &c. *Folia uva ursi. Arbutus uva ursi*, Lin. A shrub, native of the north of Europe, growing wild on the mountains of Scotland.

P. U. The leaves.

B. C. Stem repent; leaves alternate, thick, oval, entire, shining, of a deep green colour underneath, lighter on the upper surface; flowers in a terminal capitulum, eight or ten in number, each accompanied with three bracteæ; calix spreading, very small; corolla tubular, urceolate, ten stamina, anthers red; fruit, a pisiform and dry berry.

P. P. These leaves differ from box berry leaves only by their having no prominent transversal nerves, and by their shagreen-like surfaces; they have rather an agreeable smell, and are astringent and slightly bitter taste.

C. P. They contain tannin, mucus, a bitter extractive matter, resin, gallic acid, &c. Water takes up their active principles.

TH. E. This plant, the use of which has been highly recommended in calculous diseases, and which was once considered capable of dissolving calculi of the bladder and of the kidneys, produces a decided action upon the urinary organs, the secretion of which it increases. It is, therefore, frequently used in cases of gravel, blennorrhagia, chronic catarrh of the bladder, and other affections requiring the exhibition of diuretics.

D. & M. OF ADM. *Powder*, from ℈j. to ʒj. *Decoction* or *infusion*, ʒij. to ʒiv. to ℔ij. of water. *Anti-nephritic powder*, FERRIAR. (Pulv. uva ursi, and Peruvian bark, āā. ℈j.; opium, gr.ss.) four times a day; the patient is to drink ℥ij. of lime water after each dose.

PIPPSISSAWA. WINTER GREEN. *Chimaphila umbellata*, Pursh. *Pyrola umbellata*, Lin. A perennial evergreen plant, found from Canada to Georgia, N. A.

P. U. The whole plant.

B. C. Stem semi-procumbent, hard, and woody, upper part reddish, from six to eight inches high; leaves generally whorled-like, and two whorls on each stem, sometimes alternate and irregularly situated; lanceolate, ovate, deeply dentate, of a shining green colour; scape corymbiform; calix small, five-parted, persistent; flowers greenish-white tinged with red; corolla consisting of five roundish, concave, and spreading petals; anthers purple; germ globular; stigma thick and sessile; style persistent; capsule roundish, five-angled, containing numerous and chaffy seeds.

P. P. Taste bitter and astringent.

C. P. According to Dr. Mitchell, an American physician, this plant contains tannin, gum, and resin.

Th. E. Pippsissawa is very nearly related to *Uva ursi* in its botanical affinity, as well as in its remedial properties. It has been long used by the American Indians in inflammatory diseases. Its astringent, tonic, and sudorific properties had long been appreciated before its diuretic virtues were ascertained. Dr. Sommerville, of the British army, seems to have been the first who introduced this article to the particular notice of the profession as a valuable diuretic. It has been since employed, both in England and in America, in the treatment of dropsy, and it is said to be distinguished by activity and certainty of operation, with this peculiarity, that, while it stimulates the kidneys to an increased effort, it acts on the stomach as a tonic, with so much effect, that it has been prescribed for the cure of intermitting fevers. During the American war, it was employed as a tonic remedy in typhus fever.

It is commonly administered as an infusion in the same manner as the uva ursi; or in the form of extract, in doses of fifteen grains.

Family Corymbiferæ.

Philadelphia Flea Bane. Scabious. *Erigeron philadelphicum*, Lin. A perennial plant, found all over the United States of America, and now introduced in Europe, where it grows spontaneously.

P. U. The whole plant.

B. C. Stems from one to five, pubescent, two to three feet high; radical leaves oblong, base cuneate, decurrent on a long petiole, nearly obtuse; the cauline sessile, nearly amplexicaul, entire; floral leaves small, lanceolate; flowers numerous radiate, disk yellow, rays white; common receptacle bearing all the florets, flat, naked, and pitted.

P. P. This plant has a peculiar aromatic smell, rather pleasant; its taste is slightly bitter and aromatic.

Th. E. Flea bane deserves the attention of physicians, for its diuretic and antilithic properties. It is a popular remedy in dropsy, strangury from blisters, and gravelly affections. It has been used with success in gout and hydrothorax: in all cases it operates powerfully as a diuretic and diaphoretic. The plant should be collected whilst in blossom, and employed as a decoction and an infusion.

Family Urticeæ.

WALL-PELLITORY. *Parietariæ herba. Parietaria officinalis*, Lin. A native perennial plant, growing abundantly on old walls.

P. U. The whole plant.

B. C. Stem herbaceous, erect, cylindrical, hairy, reddish; leaves oval, hairy; flowers polygamous, axillary, very small: calix tubular, persistent, four-divided; stamina, four; fruit, a small ovoid capsule, inclosed in the calix.

P. P. This plant is inodorous; its taste is herbaceous and slightly salt.

C. P. It contains a great quantity of nitre and mucilage.

TH. E. It possesses diuretic properties, for which it is indebted to the nitre it contains; otherwise it is emollient and cooling. It is occasionally used in inflammatory affections of the urinary passages.

D. & M. OF ADM. Decoction, a handful to ℔ij. of water. Expressed juice, ℥ij. to ℥iv. *Distilled water*, P., ℥ij. to ℥iv. Decoction in a glyster.

Famly Rutaceæ.

CRENATE DIOSMA OR BECHU. *Folia bechu. Diosma crenata*, Thunberg. Small shrub, growing in the neighbourhood of the Cape of Good Hope.

P. U. The leaves.

B. C. Stem from one to two feet high, ramose; leaves alternate, tough, elliptical, with a short petiole; flowers large, white, solitary in the axilla of the leaves; fruit, stellate capsules, composed of five shells, each containing a shining seed, of a fine black colour, and similar to that of flax.

P. P. The bechu leaves are elliptical, lanceolate, one inch long, by five to six lines wide, very minutely dentated on their borders; upper surface smooth, and of a light green, but paler underneath, with glandular dots. Their odour is strong and penetrating, and their taste is bitter and aromatic.

C. P. According to M. Cadet de Gassicourt's analysis, they contain essential oil, 0.665; gum, 21.17; aqueous and alcoholic extract, 5.17; chlorophilline, 1.10; resin, 2.151. Their active principles are soluble in water and alcohol.

INCOMP. SUBST. Infusion of galls, and sulphate of iron.

TH. E. This substance, newly introduced into the materia medica, and already employed in England and Germany, seems to have a special action on the urinary organs. Dr. M'Dowell's observations, confirmed by those of Dr. De Fermon, and of several other practitioners, leave no doubt whatever respecting the efficacy of the bechu leaves in chronic catarrhs of the bladder, retention of urine occasioned by debility of this organ, in affections of the prostate gland, gravel, and in other cases in which diuretics are indicated. Dr. Liesching, an inhabitant of the Cape of Good Hope, considers them as a stimulant and sudorific remedy, very efficacious in cutaneous eruptions, rheumatism, and diseases of the urinary passages.

D. & M. OF ADM. Powder, ℈j. to ʒss. a day, in white wine. Infusion, ʒj. to ʒij. to ℔ij. of water.——*Tincture*, ʒij. to ʒiv.——*Compound infusion of bechu.* Dr. M'DOWELL. (Infusion of bechu, ℥vij.; tincture of bechu, and cubebs, āā ʒ ℥j. three times a day.

Colchicum autumnale, *Digitalis purpurea*, and other active substances, are also energetic diuretics, frequently exhibited; but as these medicines possess other more decided and important properties, we shall postpone speaking of them at present.

The roots of SMALLAGE, *Apium graveolens*, Lin., and of COMMON PARSLEY, *A. petroselinum*, Lin., of the family *Umbelliferæ* have an aromatic, agreeable smell, and a faint taste. They possess some diuretic virtues, and are occasionally employed in an infusion, in the dose of ℥j. to ℔ij. of water. The same is the case with respect to the root of *Eryngium campestre*, another plant of the same family, the taste of which is bitter, and slightly aromatic.

PAREIRA-BRAVA ROOT. *Cissampelos pareira*, Lin. A climbing plant, native of Brazil, of the family *Monospermeæ*. It is woody, fibrous, hard, twisted, of the size of a child's arm, brown externally, of a yellowish-gray colour internally, and marked with concentric circles, inodorous, and of a bitter taste. It has been highly recommended as a lithontriptic, but at present it is only known as a powerful diuretic, and may be used with success in cases requiring the employment of remedies of this kind, especially in chronic catarrhs of the bladder. However, it is very seldom used. It may be administered in powder, in the dose of ℈j. to ʒj., and in decoction, in that of ʒiij. to ℔ij. of water, reduced to one half.

Several other plants are ranked amongst diuretic substances, but, on account of their inconsiderable virtues, and being now seldom used, we shall simply mention their names.

Rest-harrow, *Ononis spinosa* and *O. natrix*, Lin., of the family *Leguminosæ*, the roots of which are administered in decoction. Caper-plant, *Capparis spinosa*, Lin., of the family *Capparideæ*. Rupture-wort, *Herniaria glabra*, Lin., which is still used in infusion. Ceterach, *Aspleniam ceterach*, Lin., of the family *Filiceæ*. Winter Cherry, *Physalis alkekengi*, Lin., of the family *Solaneæ*, the berries of which are red, juicy, acidulous, and slightly bitter, and are sometimes administered in the form of infusion, and they enter into the composition of several officinal preparations.

§ II. STIMULANT REMEDIES WHICH ACT ESPECIALLY ON THE SKIN.

We apply the term *sudorifics* and *diaphoretics*, (*διαφορεω*, I carry through,) to all remedies producing an increase of cutaneous perspiration. This effect is caused by a great number of substances, the nature and the *modus operandi* of which are altogether different. Indeed, most of the general stimulants which we have already mentioned, several narcotics, and even temperant remedies, exhibited in a particular manner, and under peculiar circumstances of temperature and situation, frequently provoke diaphoresis; still we cannot say that they act in a special manner on the skin; for it is evident that this effect is only secondary, and is the result of their general action on the economy. There are, however, substances which appear to exercise on the cutaneous system an influence altogether special, which influence does not seem to be in strict relation to that which they exercise on the rest of the economy. Increase of perspiration may be owing to the effects of this stimulant action on the skin, without being a necessary consequence of it. Sulphur and its preparations, for instance, act unquestionably upon the cutaneous system, although they never produce perspiration. Their action is of a peculiar nature, and inexplicable in the present state of our knowledge. Besides, most of these remedies require to be administered in a warm and abundant aqueous menstruum, in order that they may act as sudorific, and it is necessary that the patient should be in an atmosphere of mild temperature, in a state of perfect rest, and protected from currents of cold air. Remedies which act upon the skin are exhibited in various diseases, but principally in herpetic affections, and other chronic phlegmasiæ of the skin, in gout, rheumatism, syphilis, dropsy, certain catarrhal affections, &c.

MINERAL SUBSTANCES.

Brimstone. Sulphur. *Sulphur.* A simple body, existing in large quantities, in a natural state, in volcanic soils, called *Solfataras*, and combined with other bodies in the state of sulphurets and sulphates.

P. P. Sulphur is solid, of a lemon-yellow colour, inodorous, almost tasteless, crepitating and breaking when slightly heated, or pressed in the hand; of a shining, crystalline fracture; its specific gravity is 1.99.

C. P. Sulphur is unalterable in the air at a common temperature: heated, it melts at 107° or 109° Centig. (225° or 228° Fahr.) After being in fusion for some time it becomes of a reddish-brown colour, and remains soft for some time. At a higher temperature it inflames, burns with a pale blue flame, and forms sulphurous acid, the odour of which is very strong and characteristic: if not in contact with the air, while burning, it is reduced to a yellow gas, which condenses into a crystalline yellow powder, called *flowers of sulphur, sublimed sulphur, sulphur sublimatum;* this is the form under which this substance is employed in medicine. It is insoluble in water and alcohol; but it dissolves in fatty and in essential oils. It combines with almost all the simple metallic substances, and others, and forms with them sulphurets; by its union with hydrogen it constitutes hydro-sulphuric acid gas.

Prep. It is obtained by subliming common brimstone in a large cast-iron vessel, communicating with a chamber, which is used as a receiver. By means of this apparatus sulphur may be obtained either in masses or in powder. For medicinal use sublimed sulphur must be washed, in order to remove a small quantity of sulphuric acid, which is formed during the operation.

Th. E. Administered internally, in large doses, sulphur acts as a purgative; but, taken in less quantity, it increases animal heat, and the acceleration of the pulse; it promotes the secretion of the bronchi, of the skin and kidneys; in a word, it acts as a stimulant. In these cases it seems to have been absorbed and transformed, partially at least, into hydro-sulphuric acid: for, the intestinal gases, urine, perspiration, breath, and the other secretions, acquire the fetid smell peculiar to this gas, and even the silver ornaments which the patient wears about him become sometimes black, which is owing to the formation of a small quantity of sulphuret of silver. The exhibition of sulphur, continued for a length of time, is capable of producing very serious consequences, owing to its very stimulating action.

It is thus that hemorrhage, agitation, fever, &c. &c. often attend this medication. To this general action are to be attributed the success of this remedy in certain catarrhal affections, scrofulous engorgements, amenorrhœa, œdema, palsy, produced by mercurial or saturnine vapours, and numerous other chronic affections. However, the peculiar influence it exercises over diseases of the skin can scarcely be ascribed to its stimulant action on the whole economy: this influence seems to be of a peculiar nature; it changes, as it were, the mode of vitality of this membrane. It is, indeed, one of the best remedies in the treatment of herpes and psora, and in diseases of the skin generally.

This medicine is administered internally in various doses, according to the effect which we desire to produce. It is frequently employed externally in the form of salve, ointment, &c. in the treatment of the itch. In the state of sulphurous acid, it is used in vapour baths, fumigations, and, combined with hydrogen, in a state of hydro-sulphuric acid, it is the base of sulphurous mineral waters, and sulphurous baths, so frequently and successfully employed in numerous cases.

D. & M. OF ADM. *Internally*, as a purgative, ʒj. to ʒiij. in milk or in an electuary.——*Laxative electuary*, DR. PARIS. (Sublimed sulphur, ʒiv.; confection of senna, ℥jss.; syrup of roses, q. s.) Dose cochl. min. one, 3 or 4 times a day.——As a *stimulant*, gr.xij. to ℈j. two or three times a day.——*Sulphur lozenges*, P. (Sulphur, 1; sugar, 4; mucilage of gum tragacanth made with rose water, q. s.) Dose, from ʒj. to ʒiv.——*Compound sulphur lozenges*, P. (Sulphur, 36; benzoic acid, 3; orris root, 9; essential oil of aniseed, 2; sugar, 792; mucilage, q. s.) Dose, from ʒss. to ʒij.——*Oleum sulphuratum*, L., E. (Sulphur, 1 part; olive oil, 8 parts.)—P., B., DEN., PR. (Sulphur, 1 part; olive, flaxseed, or walnut oil, 4.) Dose, gutt.x. to xxx. rarely; it is used both internally and externally.——*Balsamum sulphuris anisatum*, P. (Sulphur, 1; essential oil of aniseed, 4.)——*Balsamum sulphuris terebinthinatum*, DEN. (Sulphur, 1; essential oil of turpentine, 8.) Dose, gutt.v. to x.

Externally. Vapour baths, fumigations, (see page 162.)——*Sulphuro-saponaceous lotion*, PARIS H. (Sulphur and soap, āā. ℥iij.; water, ℥xv.)——*Unguentum sulphuris*, E., D., U. S., PR., (Sulphur, 1 part; hog's lard, 4 parts.)—L. (Sulphur, ℥iij.; hog's lard, ℥viij.)—P. (Sulphur, 15; hydro-chlorate of ammonia and alum, āā. 1; lard, 30.)——*Unguentum sulphuris compositum*, U. S. (Sulphur, ℥j.; ammoniated sub-muriate of mercury and benzoic acid, āā. ʒj.; oil of lemon, f.ʒj.; sulphuric acid, ♏lx.; nitrate of potassa, ʒij.; lard, ℔ss.)—L. (Sulphur, ℔ss.; white hellebore, ℥ij.; nitrate of potassa, ʒj.; soft soap, ℔ss.; lard, ℔jss.) From 1 to 2 ounces in frictions.——*Unguentum sulphuratum compositum*, DEN., R., B., A. (Sulphur, 2; sulphate of zinc, 1; lard, 12.)—POL., PR. (Sulphur and sulphate of zinc, āā. 1; lard, 4.)——*Alkaline sulphur ointment*, P. (Sulphur, 2; sub-carbonate of potassa, 1; lard, 8.)——*Sulphuro-saponaceous salve*, PARIS H. (Sulphur and soap, āā. equal parts.)

SULPHURET OF POTASSA. *Sulphuretem potassæ*. Liver of sulphur. This compound does not exist in nature; it is always the product of art.

P. P. It is solid, hard, brittle, of a vitreous fracture, of a mineral springs. Besides the Chalybeate springs, there are two sulphurous ones, namely, the new and the old. A wine gallon of the water of the new spring contains, muriate of soda, 735 grs.; muriate of lime, 71.5 grs.; muriate of magnesia, 43 grs.; bicarbonate of soda, 14.75 grs.; sulphureted hydrogen, 6.4 cub. in.; carbonic acid, 5.25 cub. in.; azote, 6.5 cub. in.; carbureted hydrogen, 4.65 cub. in. Sp. gr. 1.01286 at 69°.

The same quantity of the water of the old spring contains, muriate of soda, 752.0 grs.; muriate of lime, 65.75 grs.; muriate of magnesia, 29.2 grs.; bicarbonate of soda, 12.8 grs.; sulphureted hydrogen, 14.0 cub. in.; carbonic acid, 4.25 cub. in.; azote, 8 cub. in.; carbureted hydrogen, 4.15 cub. in. Sp. gr. 1.01324 at 60°.

CHELTENHAM. The Cheltenham sulphur water contains, according to Brande, in each wine pint, sulphate of soda, 23 grs.; sulphate of magnesia, 5 grs.; sulphate of lime, 1.2 grs.; muriate of soda, 35,grs.; oxide of iron, 0.3 grs.; sulphureted hydrogen, 2.5 cub. in.; carbonic acid, 1.5 cub. in. Sp. gr. 1.00

LEAMINGTON. The sulphur water at Leamington, contains, according to Dr. Scudamore's anyalysis, in each pint, muriate of soda, 15 grs.; muriate of lime, 7.96 grs.; muriate of magnesia, 3.30 grs.; sulphate of soda, 11.60 grs.; sulphureted hydrogen, a quantity not ascertained; and a small trace of oxide of iron. Sp. gr. 1.0042.

MOFFAT. Moffat is a village situated about 56 miles from Edinburgh, and its sulphurous water is very celebrated. One gallon of it, according to Dr. Garnet, contains, muriate of soda, 36 grs.; carbonic acid, 5 cub. in.; nitrogen, 4 cub. in.; sulphureted hydrogen, 10 cub. in.

AIX-LA-CHAPELLE, a Prussian city near Liege. There are three principal springs, which are distributed into different establishments, the most conspicuous of which are the *Emperor's bath* and the *Herrenbad*. The waters of the Emperor's bath are of a temperature of about 58° Centig. (134° of Fahr.), and they contain in 1000 grammes, hydro-chlorate of soda, 2.96; carbonate of soda, 0.54; sulphate of soda, 0.26; carbonate of lime, 0.13; silica, 0.07; besides 20 cubic inches of hydro-sulphuric acid, 28 of carbonic acid, and 51 of nitrogen.

Artificial Aix-la-Chapelle water, P. Simple hydro-sulphur ous water; that is, water containing about its own volume of hydro-sulphuric acid gas, 130; hydro-chlorate of soda, 0.15; sulphate of magnesia, 0.05.

D. & M. of Adm. As a drink, from two tumblerfuls to one quart a day, above this dose they become purgative. Lotions, bath, and shower-bath.

Aix, a small town of Savoy, near Chambery, contains two principal springs, the one called *Sulphur spring*, and the other *Alum spring*. The temperature of the former, taken in the reservoirs called *Bouillons*, is 45° Centig. (113° of Fahr.); they contain, according to M. Socquet, in 112 lbs. sulphur united with hydrogen, 8.4; free carbonic acid, 22; extractive, containing animal matter, 2; sulphate of soda, 33; sulphate of magnesia, 29; sulphate of lime, 72; hydro-chlorate of soda, 9; hydro-chlorate of magnesia, 31; hydro-chlorate of lime, 108; and carbonate of magnesia, 59. The waters of the latter contain less hydro-sulphuric acid, and a larger proportion of free carbonic acid; however, they contain the same principles as those of the sulphur spring, but in slightly different proportions. According to Mr. Cantiù they contain besides an alkaline hydriodate.

D. & M. of Adm. As a drink, from one to four pounds, alone, or, which is preferable, edulcorated with milk. In bath, shower, and vapour-baths, in lotions, &c.

Bagneres de Luchon, a small town in the department of the *Haute Garonne*, near the frontiers of Spain, contains numerous springs, the temperature of which varies from 30° to 60° Centig. (84° to 144° Fahr.) The waters of the spring called *La Reine*, contain, according to M. Pommier, in 20 kilogrammes, hydro-sulphuric acid 18 cubic inches; carbonic acid gas, 9 cubic inches; hydro-chlorate of magnesia, 11 grs.; hydro-chlorate of soda, 8; sulphate of magnesia, 10; sulphate of lime, 23; carbonate of lime, 11; sulphur, 6; silica, 4; and vegeto-animal matter, 5.

D. & M. of Adm. As a drink, from 2 to 6 tumblerfuls every morning, either pure or edulcorated with milk. In common and shower baths, in lotion. The mud of these springs is likewise employed.

Bareges, a country town in the neighbourhood of Tarbes, department of the higher Pyrenees, affords three principal springs, which, agreeably to the temperature of their waters, have received the names of *warm*, *temperate*, and *lukewarm*. Their temperature is from 30° to 45° Centig. (84° to 113° Fahr.) According to M. Longchamp's analysis they contain caustic soda, hydro-sulphate of soda, a little sub-carbonate of lime and magnesia, silica, nitrogen, and a very small proportion of a peculiar matter of an animal nature, which he calls *Barègine*. These waters are decomposed very easily, and can hardly suffer transportation.

Artificial Barège water, P. Saturated hydro-sulphurous water, 130; pure water, 520; carbonate of soda, 0.8; hydro-chlorate of soda, 0.025.

D. & M. OF ADM. These waters are frequently employed in common and shower baths, lotions, &c., and they are commonly prescribed, at the same time, as a drink, in the dose of from three to four tumblerfuls during the course of the day.

BONNES, a small village in the department of the lower Pyrenees, several leagues distant from Pau, possesses three springs called the *old*, the *new*, and *Ortech* springs, the temperature of which varies betwixt 30° and 35° Centig. (84° and 91° Fahr.) The water of the old spring contains, according to M. Pommier, in 20 litres, besides hydro-sulphuric and carbonic acids, and nitrogen; hydro-chlorate of magnesia, 19 grs.; hydro-chlorate of soda, 27; sulphate of magnesia, 78; sulphate of lime, 129; carbonate of lime, 41; sulphur, 4; silica, 4; and loss, 5. M. Longchamp thinks that they contain likewise a very small quantity of *Barègine*. Bonnes waters decompose with less facility than those of *Barèges*.

Artificial Bonnes water, P. Pure water, 520; hydro-sulphurous water, 130; hydro-chlorate of soda, 0.15; sulphate of magnesia, 0.05.

D. & M. OF ADM. As a drink, from ℔j. to ℔vj. a day; and also in common and shower baths, in lotions, &c.

CAUTERETS, a country town near Barèges, department of the higher Pyrenees. There are about 12 springs in this place, the temperature of which varies from 30° to 51° Centig. (84 to 124° Fahr.) The two most celebrated springs are those of *Raillère* and *Mahourat*. The latter is most frequently used as a drink. The temperature of the waters of the former is 40 Centig. (104° Fahr.), and they contain, according to M. Pommier's analysis, in 20 kilogrammes, hydro-sulphuric acid, 8 cubic inches; carbonic acid, 4; hydro-chlorate of magnesia, 8 gr.; hydro-chlorate of soda, 8; sulphate of magnesia, 18; sulphate of lime, 34; carbonate of lime, 10; sulphur, 4; silica, 4. Those of Mahourat contain some hydro-sulphuric acid, salts with base of soda, and *Barègine* or a gelatinous substance.

Artificial Cauterets water. Water, ℥xx; hydro-sulphuric acid, one-third of the volume; carbonate of soda, gr.ij.; hydro-chlorate of soda, gr.j.

D. & M. OF ADM. As a drink, from two or three tumblers to a litre, pure, or mixed with milk. In lotions and baths.

SAINT-SAUVEUR, a borough near Luz, department of the higher Pyrenees, has several inconsiderable springs, the principal of which is situated on a mountain. Its temperature is 35° Centig. (95° of Fahr.), and its water contains, according to M. Pommier, in a kilogramme, hydro-sulphuric acid gas, seven cubic inches; carbonic acid gas, 4½ cubic inches; hydro-chlorate of magnesia, gr.8; hydro-chlorate of soda, 9; sulphate of magnesia, 22; sulphate of lime, 38; carbonate of lime, 9; sulphur, 31; and silica, 2.

D. & M. OF ADM. As a drink, three to four tumblers a day. In baths, &c. They are milder than Barèges waters, and more suitable to certain individuals.

ENGHIEN, a village recently built, near Montmorency, department of Seine and Oise, possesses two springs, that of the *Fishery* and the *Stinking run*. Their temperature is constantly 15° Centig. (59° Fahr.) In the waters of the first, M. Longchamp has found on analysis, in a kilogramme, water, 998.943; nitrogen, 0.008; hydro-sulphuric acid, 0.016; carbonic acid, 0.067; sulphate of lime, 0.121; sulphate of magnesia, 0.041; sulphate of potassa, 0.022; hydro-chlorate of magnesia, 0.010; hydro-chlorate of potassa, 0.042; hydro-sulphate of lime, 0.068; hydro-sulphate of potassa, 0.042; carbonate of lime, 0.506; carbonate of magnesia, 0.052; silica, 0.052; alumina, 0.004; and, finally, traces of organic matter. The water of the Stinking run seems to contain less hydro-sulphuric acid.

D. & M. OF ADM. As a drink, from two to six tumblers a day. In common and shower baths, lotions, &c. The temperature of these waters must be raised in order to use them in this manner.

There are many other natural sulphurous waters; but as they are not so much in use as those we have just described, we shall confine ourselves to mentioning the names simply of the principal ones, viz. those of SAINT AMAND, Nord, the mud of which is very celebrated for the cure of old wounds, of pains, &c.; of BADEN, Swabia, the temperature of which varies from 45° to 65° Centig. (113° to 149° Fahr.), and which are highly estimated throughout Germany; of AX, Arriége; of EVAUX, Creuse, its temperature being from 46° to 58° Centig. (115° to 137° Fahr.); of SAINT-GERVAIS, in Savoy, temperature from 40° to 45° Centig. (from 104° to 113° Fahr.); of **Greoulx**, lower Pyrenees, which are slightly sulphurous, and mark 33° to 45° Centig. (91° to 113° Fahr.); of **Olette**, eastern Pyrenees, remarkable for the high temperature of its waters, produces a rise in the Centig. thermometer as high as 80°, (176° of Fahr.); of **Loeche**, Switzerland, being of a temperature of from 46° to 52° Centig. (115° to 125° Fahr.); of **Wisbaden**, Germany, the temperature of which is 68° Centig. (154° Fahr.) &c. &c.

Besides the artificial sulphurous waters we have mentioned, we find in the French Codex the following:—

The *Simple hydro-sulphurous water*, P. Water saturated with hydro-sulphuric acid gas.

The *Acidulous*, or *Naples hydro-sulphurous water*, P. Water containing four times its volume of carbonic acid gas, 492; hydro-sulphurous water, 164; carbonate of soda, 0.9; carbonate of magnesia, 0.5.

Hydro-sulphurous water for bath, P. Solution of sulphuret of soda, marking 25° of Baumé's areometer, 5; gelatinous saline solution, 2; water, q. s. The *Gelatinous solution* is prepared in the following manner: distilled water, 500; carbonate of soda, and gelatine āā. 32; sulphate and hydrochlorate of soda, āā. 16; naptha, 1.

VEGETABLE SUBSTANCES.

Guaiacum. *Guaiacum officinale*, Lin. A tree, native of the West Indies.

P. U. The wood and resin.

B. C. Trunk elevated; leaves opposite, pari-pinnate, composed of two or three pairs of sessile and oval folioles about one inch long; flowers blue, eight or ten in the axilla of the leaves; calix, five deep divisions; corolla stellate, five petals; ten stamina; ovary pedicellate, surmounted by a simple style; fruit, a capsule, commonly flattened, cordiform, with two and sometimes five cells.

Guaiacum Wood. *Lignum guaiaci*, seu *Lignum sanctum*.

P. P. This wood is found in commerce in large irregular pieces or logs, the exterior of which is frequently furnished with a thick, grayish, resinous bark. The part properly called wood is very compact, hard, heavier than water, and of a greenish-brown, whilst the alburnum, or inner bark, is of a light yellow colour, and of a much softer nature. The taste of guaiacum is very acrid and slightly bitter, and it has hardly any smell. For medical uses this wood is reduced to a coarse powder by means of a rasp, *Rasura ligni guaiaci*. This powder, yellow at first, becomes green by exposure to light, and provokes sneezing, although it is almost inodorous.

C. P. Guaiacum wood contains a large quantity of a peculiar resin, which we shall soon examine, and a small quantity of essential oil, possessing the smell of vanilla. Water dissolves its active principles only after long ebullition; they are, on the contrary, very soluble in alcohol and ether.

Th. E. See resin of guaiacum.

D. & M. of Adm. *Decoction*, ℥ss. to ℥ij. to Oiij. of water, reduced one-half. ——*Decoctum guaiaci*, formerly *Decoction of the woods*, E., U. S. (Guaiacum wood, ℥iij.; raisins, ℥ij.; sassafras, liquorice, āā. ℥j.; water, Ox.; reduce to one half.)—P. (Guaiacum and sarsaparilla, āā. 6; sassafras, 1; liquorice, 2; water, 250.)—New York H. (Guaiacum, ℥ij.; sarsaparilla, sassafras, liquorice root, āā. ℥j.; mezereon bark, ʒvj.; water, Ovj.; boil down to Oiv.)——*Thea amara*, Den. (Guaiacum, juniper berries, senna, and water trefoil, āā. equal parts.)——*Decoctum lignorum*, B., F. (Guaiacum, 10; burdock, and soap wort, āā. 6; sassafras and liquorice, āā. 3; water, 576.——*Extractum ligni guaiaci*, A., Pr., Pol., Den. ʒss. to ʒj.——*Tinctura ligni guaiaci*, P., Pr. from ʒss. to ʒj.

Resin of Guaiacum. *Resina guaiaci.* A peculiar juice, exuding from the bark of the tree just described, and which Mr. Brande considers as a proximate principle, *sui generis*, which he calls *guaiacine*.

P. P. This substance is in irregular masses, brittle, with a shining fracture, of a greenish-brown colour, of an agreeable smell, similar to that of benzoin; its taste is weak at first, then acrid, and producing a considerable irritation of the throat. Its specific gravity is 1.2289; reduced to powder, it is grayish at first, but it soon becomes green wherever it is in contact with the air and light.

C. P. The resin of guaiacum, according to Brande, contains 798 of pure resin, and 202 of bark. Water dissolves only 9 per cent.; whilst alcohol takes up about 95 of that substance. The alcoholic solution is of a deep brown colour, which soon changes to blue or green by the action of nitric acid or starch. It is very soluble in the alkalies and in their carbonates.

Incomp. Subst. Mineral acids.

Th. E. The wood and resin of guaiacum act upon the economy as stimulants; but they appear to exercise a more special influence upon the skin, the secretion of which they increase in a remarkable manner. In consequence of this mode of action, these substances are employed in gout, chronic rheumatism, and affections of the skin; in old and obstinate venereal diseases, scrofulous affections, &c. When guaiacum was first introduced into the materia medica, it was thought capable of curing syphilitic diseases, without the assistance of other remedies; now it is considered only as a powerful aux.

liary to mercury in cases of this nature. The wood is commonly used under these circumstances. The resin is administered in preference to the wood in rheumatism, gout, &c. In large doses the resin becomes purgative.

D. & M. OF ADM. Gr.x. to ℈j. in pills, or suspended in an emulsion, by means of the yolk of an egg.——*Bolus guaiaci comp.* GUY'S H. (Resin of guaiacum, ʒij.; ipecacuanha and opium, gr.vj.; conserve of roses, q. s.) For six bol. No. j., ij., or iij. a day.——*Mistura guaiaci*, L. (Resin of guaiacum, ʒjss.; sugar and mucilage of gum arabic, āā. ʒij.; cinnamon water, f.℥viij.) Dose, ℥j. to ℥ij. two or three times a day.——*Mistura guaiaci ammoniata*, GUY'S H. (Resin of guaiacum, ʒij.; liquor of sub-carbonate of ammonia, ʒijss.; barley water, ℥viij.) Dose, from ℥ss. to ℥j. two or three times a day.——*Tinctura guaiaci*, U. S. (Resin of guaiacum, ℔j.; alcohol, Oijss.)—L. (Resin of guaiacum, ℔ss.; proof spirit, Oij.)—D. (Resin of guaiacum, ℥iv.; proof spirit, Oij.)—E. (Resin of guaiacum, ℥vj.; alcohol, ℔ijss.)——*Tinctura guaiaci ammoniata*, L., E., D., U. S., PR., POL., DUB., F. (Resin of guaiacum, ℥iv.; ammoniated alcohol, Ojss.) Dose, from ʒj. to ʒij.——*Sapo guaiacinus*, PR., POL. (Saturated solution of caustic. soda, and water āā. equal parts; resin of guaiacum, as much as may be dissolved.) Dose, from gr.vj. to xii. in pills.

Family Asparagineæ.

SARSAPARILLA. *Sarsaparillæ radix. Smilax sarsaparilla*, Lin. A sarmentose shrub, growing spontaneously in Peru, Mexico, and all over South America.

P. U. The root.

B. C. Stem articulate, branchy, furnished with recurved thorns; leaves alternate, tough, cordiform, furnished with two tendrils at their base; flowers greenish, dioicous, in small simple umbels upon a common pedicle; calix six-divided, male flowers, six stamina; female flowers, one ovary with three monospermous cells; three stigmas; fruit, a round berry of a reddish colour, containing three seeds.

P. P. Root fibrous, several feet long, of the size of a quill; bark wrinkled, gray or reddish externally, white or of a slightly pink colour internally, inodorous, of a mucilaginous and bitterish taste.

C. P. According to Pallota, this root contains some *Pariline*, fecula, mucilage, and albumen; boiling water and alcohol take up its active principles.

PARILLINE. *Pariglium*. A peculiar proximate principle, discovered by Pallota. It is white, pulverulent, heavier than distilled water, of a bitterish and slightly astringent taste, and of a peculiar odour. It is slightly soluble in warm water, and cold alcohol, but this menstruum when boiling dissolves it completely. It reddens curcuma slightly, is decomposed by concentrated acids, and by heat, and forms neutral salts with diluted acids. According to experiments performed by Pallota upon himself, we are inclined to believe that this substance is the active part of sarsaparilla. It has not as yet been employed as a remedy; but it may prove very important, by giving it a fair trial.

Incomp. Subst. Infusion of galls, lime water, nitrate of mercury, and acetate of lead.

Th. E. Sarsaparilla has been considered as essentially diaphoretic and diuretic, still its action is very weak in this respect. It is not easy to ascertain the *modus operandi* of this substance. The only positive knowledge we have respecting it is, that Parilline, in the dose of a few grains, diminishes the frequency of the pulse, produces nausea, syncope, a general state of weakness, &c. This root is frequently employed, either alone, or in connexion with other substances, in the treatment of secondary syphilitic symptoms, in chronic rheumatisms, and certain diseases of the skin. It seems to be useful in arresting the ulcerations of the larynx and pharynx proceeding from venereal diseases, or from the abuse of mercurial preparations.

D. & M. of Adm. Powder, ʒss. to ʒj. Decoction, ℥ij. to ℥iv. to Oij. of water, reduced to Oj.——*Decoctum sarsaparillæ*, E., U. S. (Sarsaparilla, ℥vj.; water, Cj.)—L. (Sarsaparilla, ℥iv.; water, Oiv.)—D. (Sarsaparilla, ℥jss.; water, Oij.) Boil down to one half.——*Decoctum sarsaparillæ compositum*, *Lisbon diet drink*, D., U. S. (Sarsaparilla, ℥jss.; guaiacum, sassafras, liquorice, āā. ʒij.; mezereon, ℥j.; boiling water, Oiij.) Boiled down to one-half.—L. (Boiling decoction of sarsaparilla, Oiv.; sassafras, guaiacum, liquorice root, āā. ℥j.; mezereon bark, ʒiij.) Boil for a quarter of an hour.——*Decoctum anti-venereum ulyssiponense*, B. (Sarsaparilla, red and yellow sanders, āā. 6; rose wood, guaiacum, sassafras, āā. 2; sulphuret of antimony, 4; mezereon bark and liquorice, āā 1; water, 256.)——*Decoctum Pollini*, B. (Sarsaparilla, China root, pumice stone, and sulphuret of antimony, āā. 1; green rind of European walnut, 20; water, 100.) Dose, a tablespoonful every hour.——*Feltz's drink*, Paris H. (Sarsaparilla, ℥iij.; isinglass, ℥ss; crude antimony, ʒiv.; water, ℔iv.)——*Decoctum sarsaparillæ cum mezereo*, B. (Sarsaparilla, 12; mezereon bark, 1; liquorice, 6; water, 384.) Dose, from ℥vj. to ℔j. a day.——*Decoctum Zitmanni fortius*, B. (Sarsaparilla, 96; sugar of alum,[*] 12; proto-chloride of mercury, 4; artificial cinnabar, 1; aniseed and fennel, āā. 4; senna, 24; liquorice, 12; water, 2304; boil down to one-third.) Dose, one pound morning and evening.——*Decoctum Zitmanni mitius*. (To the residue of the preceding decoction, add sarsaparilla, 48; lemon peel, cinnamon, cardamon, and liquorice, āā. 3; water, 2304; prepare in the same way.) Dose, one pound at noon.——*Extractum*, L. &c., gr.xij. to ʒj.——*Syrupus sarsaparillæ* P. (Sarsaparilla, simple syrup, and honey, āā. 1 part; water, 20 parts. Dose, from ℥j. to ℥ij.——*Syrupus sarsaparillæ compositus*, *Cuisinier's syrup*, P. (Sarsaparilla, honey, and sugar, āā. ℔xvj.; borage flowers, pale roses, senna, and aniseed, āā. 1.)—U. S. (Sarsaparilla, honey, and sugar, āā. ℔ij.; liquorice, roses, senna, and aniseed, āā. ℥ij.; water, Oxii.)——*Syrupus sarsaparillæ et guaiaci*, U. S. (Sarsaparilla and guaiacum. āā. ℔j.: roses, gum Arabic, and senna, āā. ℥j.; ginger, ℥ss.; water, Ox.)——*Dr. Savaresi's Laffecteur's anti-syphilitic rob*. (Sarsaparilla, 36; guaiacum, China root, and sassafras, āā. 24; Calisaya bark, 12; borage flowers, 6; aniseed, 1; water, as much as necessary, clarified molasses, 120.) Dose, from ℥ss. to ℥j.

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[*] This is nothing more than some powdered alum, triturated with rose water and albumen, and formed in the shape of small pyramids.

China Root. *Radix chinæ. Smilax china*, Lin. A sarmentose shrub, very nearly related to the preceding, and growing in China and in South America.

P. U. The root.

P. P. This root is about the size of the first; lignous, heavy, knotty, hard, compact, of a deep brown colour internally, covered with a smooth, reddish-brown bark, inodorous, and of a viscous and slightly harsh taste.

C. P. It contains a good deal of fecula, some gum, and a red colouring principle, soluble in water; this menstruum dissolves the small quantity of active principles it contains.

Th. E. Its employment is the same as that of sarsaparilla, with which it is generally associated. It is, however, a very weak and doubtful remedy.

D. & M. of Adm. *Decoction*, ℥ij. to ℥iij. to ℔ij. of water.

Family Laurineæ.

Sassafras. *Radix et Cortex sassafras. Laurus sassafras.* Lin. A tree, native of North America.

P. U. The wood and bark of the root.

B. C. Trunk from thirty to forty feet high; leaves alternate, caducous, of various shapes, green on the upper surface, whitish underneath; flowers dioicous, yellowish, in small panicles; male flowers, calix pubescent, six-parted, nine stamina, three of which are barren; anthers quadrilateral, four-celled; pistil barren; female flowers, five barren stamina; stigma globular; ovary ovoid; fruit, a pisiform drupe.

P. P. This root is found in commerce in pieces of the size of the arm; the lignous part is light, porous, composed of concentric layers, of a yellowish colour, of a strong, aromatic smell, of a sweetish taste at first, then warm and slightly acrid. The bark is thick, rugose, of a spongy nature, of a red brown colour, and furnished with a resinous, yellowish epidermis. Its smell and taste are much stronger than those of the wood.

C. P. This substance contains an essential oil, heavier than water, very volatile, of a pale yellow colour, becoming red by the action of light. Water and alcohol principally take up its active principles.

Th. E. It is an energetic stimulant, employed, generally, as a sudorific, in similar cases to those in which guaiacum is used: it is often combined with the latter.

D. & M. of Adm. *Powder*, seldom, ʒss. to ʒj. *Infusion*, ℥j. to ℥ij. to ℔ij. of boiling water. *Distilled water*, P. ℥j. to ℥ij. *Essential oil*, gutt.ij. to gutt.x. *Aqua calcis comp.*, M. (Sassafras, 16; liquorice, 8; pulverized nutmeg, 3; lime water, 48:) Dose, ℥ij. to ℥iv.

Family Solaneæ.

Bitter-sweet. *Dulcamaræ caules.* *Solanum dulcamara*, Lin. A native under-shrub, flowering in June and July.

P. U. The stems.

B. C. Stems sarmentose, lignous at their base, herbaceous in the rest of their length; several feet long; leaves alternate, tri-lobed; flowers violet, pedunculate and in clusters; calix persistent, very small; corolla with narrow lobes, marked at their base with two small green dots; stamina partly united in a cone; fruit, an ovoid, red berry.

P. P. The woody part, cut in small pieces and split in two, is only employed. This plant possesses a strong, virous smell, which becomes weaker on desiccation, and a bitter taste, leaving after it a sweetish taste.

C. P. Bitter-sweet contains an alkaloid substance, discovered by Desfosses, and called by him *Solania*, combined with a peculiar acid, discovered and denominated *solanic acid* by Peschier; and several salts, with base of lime and potassa. Water dissolves its active principles.

Th. E. Dulcamara irritates the digestive canal, and when absorbed, it seems to act principally upon the cutaneous system. In fact, it promotes perspiration, causes an itching and pricking of the skin. It acts likewise on the nervous system; for its employment is occasionally followed by slight convulsive motions, heaviness of the head, &c. However, the narcotic influence attributed to it appears to be rather suppositititious than real, or at least it is very weak. This substance has been recommended as a sudorific in rheumatic and venereal affections, in itch and several other diseases of the skin; but it is now much less used than it was formerly.

D. & M. of Adm. Powder, ʒss. to ʒj. Decoction and infusion, ℥ss. to ℥j. to ℔ij. of water.——*Extractum dulcamaræ*, Pol., Pr., A., ℈j. to ʒj.

Garden Nightshade. *Solanum nigrum*, Lin. An annual native plant, nearly related to the preceding. Its flowers are white, and its berries black, when in the state of maturity. It contains, like the bitter-sweet, some *Solania* united with malic acid. Its action upon the system is very slight; indeed, its leaves when boiled are made use of in some countries as an aliment: it is, moreover, of the same nature as that of the bitter-sweet, with which it may be combined. It is principally used in the form of emollient and sedative poultices in cases of whitlow, of phlegmon, and painful cutaneous eruptions.

Solania. An alkaloid proximate principle, discovered by M. Desfosses in the bitter-sweet, and several other plants of the genus *Solanum*. M. Peschier has since ascertained that this substance was in combination with a peculiar acid, which he has called *Solanic acid*.

P. P. *Solania* is pulverulent, white, opaque, pearl-like, inodorous, of a nauseous and bitter taste.

C. P. It is unalterable in the air, insoluble in cold water, soluble in 8000 of this menstruum when boiling, and in very small quantity in alcohol. Its alkaline properties are very weak; it restores to their blue colour solutions of litmus reddened by an acid. It combines easily with acids, and forms with them perfectly neutral and uncrystallizable salts. Heated, it decomposes without melting or evaporating.

Th. E. According to Dr. Magendie's experiments, solania produces at first violent vomiting, then somnolency, and drowsiness; which proves that it acts on the encephalon. It has not as yet been employed as a remedy. It might, perhaps, be administered in the state of an acetate, in the cases in which bitter-sweet is indicated, in the dose of one-eighth to one-fourth of a grain in pills.

Family Apocyneæ.

Pleurisy-root. **Flux-root**, &c. *Asclepias tuberosa*, Lin. *A. decumbens*, Var. A perennial plant, growing all over the United States of America, in gravelly and hilly grounds, and along streams.

P. U. The root.

B. C. Many stems, either erect, ascending or procumbent, round and hairy; leaves scattered, sessile, or on short petioles, entire, oblong, lanceolate; flowers in terminal or lateral corymbose umbels, of a bright orange colour; calix small, reflected, five-parted; fruit, two oblong follicles, often abortive; seeds flat, ovate, furnished with a silky appendage.

P. P. Root large, irregular, tuberose, white internally, brown externally. When dried, it is brittle and easily pulverized. Taste slightly bitter, but not unpleasant. The fresh root, as well as the whole plant, is lactescent and nauseous.

C. P. No accurate analysis has as yet been made.

Th. E. This medicine has been long used in the southern states of America as a popular remedy. It seems to act powerfully on the cutaneous system, inducing a general and plentiful perspiration without heating the body. In the form of decoction it often occasions diaphoresis when other medicines have failed to produce this effect. The powder frequently occasions alvine evacuations; but it is particularly valuable as an expectorant, a diaphoretic, and a febrifuge. In pneumonic fevers, recent colds, catarrhs, diseases of the chest in general, this medicine has proved equally efficacious. It is directed to be taken in the form of strong infusion, in the dose of a tea-cupful every two or three hours.

D. & M. OF ADM. Powder,.as a tonic and diaphoretic, from 20 to 40 grains. Decoction, (Pleurisy-root, ℥j. to one quart of water.) Dose, one tea-cupful every two or three hours. In dentition, (ʒij. of the root boiled in ℥xviij. of milk down to ℥xij.) Dose, ℥i. of the decoction to be given two or three times in the course of the day. It excites a copious perspiration, and proves at the same time a gentle cathartic.

The root of the SWALLOW-WORT or TAME-POISON, *Asclepias vincetoxicum*, Lin., a native plant, is white, of a strong odour, and acrid taste, when green. It loses some of its properties by desiccation. It contains, according to M. Feneulle, a matter capable of producing vomiting, but differing from emetine; a resin, mucilage, some fecula, a fatty oil, a volatile oil, ligneous fibres, and malates of potassa and lime. This substance, once so much praised as an *Alexipharmic*, irritates powerfully the stomach and intestines, and frequently produces vomiting and alvine evacuations. In small doses it seems to act as a diaphoretic, but it is now almost out of use. It is administered in the dose of ℥ss. to ℥j. to ℔ij of water. It enters into the composition of some officinal preparations.

Family Gramineæ.

PROVENCE REED. *Radix Donacis*. *Arundo donax*, Lin. A perennial plant, growing in the south of France.

P. U. The root.

B. C. Culm lignous, from eight to ten feet high; leaves long, rough, two feet long; flowers in very large, ramose, and terminal panicles, the spikelets solitary; exterior calix, tri-flore, with two awns; glume surrounded by persistent bristles; three stamina.

P. P. This root is met with in commerce in slices or pieces of different sizes. It is spongy externally, and hard internally, of a yellowish colour, furnished with a yellow, shining epidermis, marked with a great number of circular lines; it is of a sweet taste, and inodorous.

C. P. It contains, according to M. Chevallier, a mucous matter slightly bitter, a resinous matter similar to that of vanilla, an essential oil, a substance containing nitrogen, sugar and salts of potassa and lime. Water takes up its active principles.

Th. E. This root is a remedy of little activity, to which are, however, attributed some diaphoretic and diuretic virtues. It is a popular remedy employed in superabundance of milk after child-bed; females of the lower classes of society consider it as an extraordinary remedy in such cases.

D. & M. of Adm. Decoction, ℥ss. to ℥ij. to ℔ij. of water reduced to one half.

Broom-reed, *Arundo phragmites*, Lin., possesses the same properties as the preceding, and is frequently used in its stead. It is supposed to be one of the ingredients of the *Rob de Laffecteur*, so highly spoken of as a specific in constitutional syphilis.

Family Terebinthaceæ.

Poison Oak. ***Rhus toxicodendron***, and ***Rhus radicans***, Lin. A shrub, native of North America, which grows wild in the woods and in old fields.

P. U. The leaves.

B. C. Stem of a moderate growth, climbing; leaves alternate, ternate, folioles pedicellate, oval, green, smooth above, and generally pubescent beneath; flowers dioicous, axillary, in sessile racemes; fruit, small berries or dry drupes, yellowish-white, containing a globular and striated seed.

P. P. Poison oak possesses the singular property of exciting, when touched, and even by the simple exposure to the emanations emitted by it, a violent irritation of the skin, which is soon covered with red spots, and sometimes even with pimples. The whole plant, and especially the leaves, contain a resinous and extremely acrid milky juice.

C. P. M. Van Mons, of Brussels, asserts that the poisonous exhalation of this shrub is a carbureted hydrogen gas, and that it contains also a considerable quantity of tannin, some gallic acid, a small portion of green fecula, and a still smaller quantity of gum and resin.

Th. E. According to Orfila's experiments this substance acts upon the economy like the narcotico-acrid poisons. In small doses it proves a very energetic stimulant, and seems also to exercise a considerable influence on the skin. Dr. Dufresnoy has exhibited it very successfully in obstinate tetter, and it has been used in this country in chronic rheumatism, palsy, epilepsy, &c. However, it is a dangerous remedy, requiring the greatest prudence.

D. & M. of Adm. The powdered leaves, gr.ss. to gr.iv. in pills. The extract, P. prepared with the fresh leaves, is used in the dose of gr.x. to ℈j. per day, and gradually increased to ʒj. and even to ʒij.

Family Campanulaceæ.

Blue Lobelia, or Blue Cardinal Flower. *Lobelia syphilitica*, Lin. A perennial plant, growing in marshes, meadows, &c.

P. U. The root.

B. C. Stem erect, angled, and simple; hirsute above, from one to three feet high; leaves creuulate, denticulate; flowers of a fine blue colour, on short bracteated pedicles, disposed on a long, leafy, terminal, and sometimes axillary spike; calix hirsute, with five hastate and hispid segments; filaments of a lead-blue colour; anthers white.

P. P. Lactescent when fresh, of an acrid, persistent taste, resembling that of tobacco, and exciting nausea; the dry leaves are of a yellowish-gray colour, marked with circular and longitudinal striæ, of a sweet and afterwards slightly acrid taste, and leaving in the mouth a weak aromatic perfume.

Th. E. This plant acts as a sudorific, when given in small doses, but in large quantities it acts as an emetic, and it often purges. It has enjoyed a reputation in the treatment of venereal diseases, but it is now entirely discarded for this purpose; however, its diuretic properties are fully confirmed, and it seems not unreasonable to conjecture that to this cause the plant owes its reputation as an anti-syphilitic, in consequence of its having proved serviceable in gonorrhœa. This species of lobelia has been exhibited with advantage in dropsy.

The **Red Sanders Wood** is furnished by the *Pterocarpus santalinus*, Lin., a tree of the *Family Leguminosæ*, which grows in Ceylon; and those of the **White** and **Yellow Sanders**, which seem to be produced by two varieties of the *Santalum album*, Lin., of the family *Santalaceæ*, which family has been formed out of the *Onagræ*, were once considered eminently sudorific. They are now almost out of use, except that they enter into a few officinal preparations.

The same may be said of the **Rhodium** or **Rose Wood**, which is furnished by a sarmentose shrub of the family *Convolvulaceæ*, *Convolvulus scoparius*, Lin., growing in the Canary Islands.

The roots of the **Long** and **Round Cyprus Grass.** *Cyperus longus* and *C. Rotundus*, Lin., and those of the **German Sarsaparilla**, *Carex arenaria*, Lin., of the family *Cyperaceæ*, were once administered as sudorifics; but they are now obsolete; however, the latter is still used in Germany, as a substitute for sarsaparilla, in the treatment of syphilis.

Finally, the following plants have also been used as possessing inconsiderable diaphoretic properties, viz. The STEMLESS MILKVETCH, *Astragalus exscapus*, Lin., of the family *Leguminosæ;* the COMMON FIELD SCABIOUS, *Scabiosa arvensis,* Lin., of the family *Dipsaceæ;* the inner bark of the COMMON ELM TREE, *Ulmus campestris,* Lin., of the family *Ulmaceæ;* the leaves of the BLACK CURRANT, *Ribes nigra,* Lin., of the family *Ribesiæ;* the root of the SPANISH VIPER GRASS, *Scorzonera hispanica,* Lin., of the family *Synanthereæ;* the petals of the RED PINK, *Dianthus caryophyllus,* are used to prepare the *Pink syrup,* P., which is employed to edulcorate exciting and diaphoretic mixtures and ptisans, &c. &c.

§ III. REMEDIES WHICH ACT IN A SPECIAL MANNER ON THE ORGANS OF GENERATION.

We shall not here treat of the long list of substances which old authors used to rank among *Emmenagogues,* or remedies capable of provoking menstruation; for most of these remedies have no special action on the womb, but they act on the genital organs as they do on the whole economy, by their general stimulation. The ferruginous preparations, which are very frequently used to restore or promote the menstrual discharges, may be taken as an instance of our position.

We are not acquainted with any remedy possessing the peculiar property of promoting the flow of the menses, but there is a certain number of them, that, at the same time that they stimulate generally the whole economy, seem to act more particularly and with more energy upon the organs of generation. Cantharides, which we have already mentioned under the head of vesicating substances, are of this number. Those which we shall now investigate seem to irritate the matrix in a special manner. These remedies are not numerous, and are seldom exhibited.

Family Rutaceæ.

COMMON RUE. *Rutæ herba. Ruta graveolens,* Lin. A perennial under-shrub, native of the south of France, and cultivated in our gardens.

P. U. The whole plant, but principally the leaves.

B. C. Stem ramose, from three to four feet high, glaucous; leaves scattered, compound, glaucous, furnished, like the stem and branches, of a great number of glandular bodies; flowers yellow, in corymbiform panicles, each furnished with a bractea; calix plane, persistent, with four sharp divisions; petals concave, unguiculate; anthers bilocular, ovoid; style central, shorter than the stamina; stigma simple; fruit, a capsule with four or five polyspermous cells.

P. P. This plant has a strong, aromatic, and unpleasant smell, and an acrid, bitter, and warm taste.

C. P. It contains a very abundant quantity of volatile oil, of a green colour, when furnished by the green leaves, and yellow when distilled from the dry plant; of a less unpleasant smell than the herb itself, which contains also some sulphur. The active principles are dissolved by water, and particularly by alcohol.

Th. E. It is a very energetic general stimulant, but it seems to exercise at the same time a peculiar influence on the uterus. Indeed, this remedy causes irritation and even inflammation of this organ, without producing any general stimulant effects so sufficiently marked as to induce us to attribute to them the local phenomena of which we are speaking. It is exhibited with advantage in cases of amenorrhœa, proceeding from debility of the uterus, in chlorosis, hysteria, &c. It is used also as a vermifuge.

D. & M. of Adm. Powder, gr.xij. to ℈j. in pills. Infusion, one or two pinches to ℔ij. of boiling water.——*Aqua rutæ*, A., Pr., Pol. Dose, ℥ss. to ℥ij.——*Extractum rutæ*, L., E. Dose, gr.x. to ℈j.——*Oleum rutæ*, P., Pol., Pr., D., R. Dose, gutt.ij. to x.——*Acetum rutæ*, Pr., A. (Rue, I; vinegar, 8.) Dose, ℥ss. to ℥j., in an enema.

Externally. Infusion, in lotions, fumigations, steam baths.

Family Coniferæ.

Savin. *Sabinæ folia et rami. Juniperus sabina,* Lin. A shrub, native of the south of Europe, but cultivated in our gardens, flowering in May and June.

P. U. The leaves and branches.

B. C. Stem from ten to fifteen feet high; leaves very small, squamiform, opposite, imbricate upon the stem; flowers dioicous, in aments; fruit, pisiform and blackish berries, containing two small stones.

P. P. This plant possesses a strong turpentine smell, and a very acrid and bitter taste.

C. P. It contains a large quantity of very odorous and acrid volatile oil. Water and alcohol dissolve its active principles.

Th. E. Savin possesses properties similar to those of rue; it is perhaps still more active. It is employed internally to fulfil similar indications, and externally as an irritant, applied to fungous ulcers. It is a dangerous remedy, and is now seldom used.

D. & M. OF ADM. *Internally*. Powder, gr.v. to ℈j., two or three times a day. *Infusion*, seldom, ℈j. to ʒss. to two pounds of boiling water.——*Extractum sabinæ*, D. Dose, gr.x. to ℈j.——*Oleum volatile sabinæ*, E., D., P. Dose, gutt.ij. to x. in a mixture.

Externally. Powder, upon atonic and fungous ulcers and warts. *Infusion*, in lotion, bath, fumigations, and poultices.——*Ceratum* seu *Unguentum sabinæ*, U.S. (Savin leaves in powder, one part; resin, cerate, six parts.)—L. (Fresh leaves of savin, bruised, ℔j.; yellow wax, ℔ss.; lard, ℔ij.)—D. (Fresh leaves of savin and yellow wax, āā. ℔ss.; lard, ℔ij.), used as an epispastic.

RED CEDAR. *Juniperus Virginiana*, Lin. A native tree of North America, of considerable size, growing principally in the southern states.

P. U. The leaves.

B. C. Trunk from thirty to forty feet high, very branchy; leaves numerous, small, scaly, and mucronate, ternate, and joined at the base, the younger imbricate, the older loose; flowers very small, both sexes frequently found on the same tree, and in other instances located on two different trees; fruit, small blue berries, one or two-seeded; seeds nuciform.

TH. E. Very similar in appearance, taste, and medicinal virtues to savin, by which name it is known throughout the country. It is a general stimulant, and is also an emmenagogue, and rubefacient. It seems to possess the same properties as savin, and has been long used for the same purposes. The fresh leaves, boiled for a short time in about their weight of lard, with a little wax, form an excellent cerate of peculiar efficacy as a perpetual epispastic, producing a change in the discharge from a serous to a purulent appearance. Internally, the effects of the leaves are very similar to those of savin, as an emmenagogue, a general stimulant, and a diaphoretic, in rheumatism. They have also some reputation as a diuretic in dropsy.

Family Irideæ.

SAFFRON. *Crocus*. *Crocus sativus*, Lin. A plant, native of the Levant, and cultivated very extensively in England.

P. U. The stigmas.

B. C. Bulb round, depressed and fleshy; leaves erect, green on the upper surface, white underneath; flowers, one to three, very large, violet with red veins; calix petaloid, with a long and thin tube; stamina situated at the base of the three external divisions of the calix; style trifid; three crenate stigmas; fruit small, globular, and three-celled capsule.

P. P. This substance is in long filaments, slightly rolled, flexible, elastic, of a very deep orange-red colour, of a sharp and bitter taste, and of a strong peculiar odour. It dyes the saliva of a golden yellow.

C. P. Saffron contains an orange-red colouring matter, a very odorous volatile oil, acrid and caustic, a concrete fixed oil, gum, albumen, and salts. The substance which Bouillon Lagrange, and Vogel, have denominated *Polychroite*, is but a compound of colouring matter and volatile oil. Water, alcohol, vinegar, &c., dissolve its active principles.

Th. E. In small doses, saffron is employed as an excitant of the digestive organs; in large doses, it acts upon the whole economy in the same way as stimulants; but it is principally upon the uterus that it seems to exercise its influence. It is employed with success to abate the lumbar pains which precede or accompany menstruation in some females, and it is frequently useful in chlorosis, hysteria, &c. It is likewise employed as stomachic and anti-spasmodic. It enters into the composition of several officinal preparations.*

D. & M. of Adm. Powder, gr.xij. to ℈j. Infusion, ʒss. to ʒj. to ℔ij. of boiling water.——*Stomachic bolus*, Paris H. (Saffron and cinnamon, āā. gr.xij.; simple syrup, as much as necessary to form two bol.) Dose, No. 1, morning and night. ——*Confectio aromatica*, L. (Cinnamon and nutmeg, āā. ℥ij.; cloves, ℥j.; cardamom, ℥ss.; saffron, ℥ij.; prepared shells, ℥xvj.; refined sugar, ℔ij.; water, Oj.)—D. (Cinnamon and nutmeg, āā. ℥ss.; sugar and saffron, āā. ℥j.; cardamom and cloves, āā. ℥ij.; precipitated chalk, ℥ij.; syrup of orange, a sufficient quantity.) Dose, from grs.x. to ʒj.——*Electuurium croci*, P. (Saffron and red sanders, āā. 6; cinnamon, 22; origanum and yellow sanders, āā. 3; myrrh, terra sigillata, and prepared chalk, āā. 64; capillaire syrup and white sugar, āā. 125.)——*Tinctura croci sativi*, E., D. (Saffron, ℥j.; proof spirit, ℥xv. or Oj.)—P. (Saffron, 1; alcohol, 12.) Dose, from ℈j. to ʒj.——*Syrupus croci*, P. (Saffron, 1; Malaga wine, 16; sugar, 26.)—L. (Saffron, ℥j.; boiling water, Oj.; sugar, ℔ijss.)—Pol., Pr. (Saffron, 1; French wine, 24; sugar, 18.) Dose, from ʒij. to ℥ss.

Externally. In lotions, fumigations, &c.

Ergot or Spurred Rye. *Secale calcaratum* seu *cornutum*. *Clavus Secalinus*. A fungiform excrescence which takes place under peculiar circumstances, between the valves of the glume of several cereales, and especially of rye, *Secale cereale*, Lin. De Candolle considers it as a species of parasite fungus, which he calls *Sclerotium clavus;* but M. Leveillé thinks, with more reason, that it is composed of the unfecunded, altered, and degenerated ovary, and of a species of fungus placed at its summit, and to which he gives the name of *Sphacelia segetum*.

P. P. Ergot is elongated, recurved, cylindrical, swollen in the middle, and generally marked on one of its sides with a longitudinal furrow. It is, moreover, brittle, hard, horny, and of a dark violet colour externally, whitish, with a shade of violet internally; of an acrid and rather pungent taste; of a faint, unpleasant odour, which is only manifest when it is in considerable quantities.

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* Saffron was at one time a medicine of great repute in this country, and it is still used as a popular remedy in many diseases, particularly measles; but it is now very seldom employed by medical practitioners, and there is every reason to believe that its medicinal properties are very few and feeble.—Editor.

C. P. The spurred rye contains, according to M. Vauquelin, a deep yellow colouring matter, soluble in alcohol, a free acid, which seems to be phosphoric acid, some free ammonia, a very putrefiable matter containing nitrogen. Water and alcohol take up the active principles of this substance.

Th. E. The use of spurred rye, as an aliment, is attended with serious accidents, such as violent convulsions, acute and burning pains in the extremities, gangrene in these parts, and even death. The name of *ergotism* is given to the whole of these phenomena. In small doses this substance acts in a special manner upon the uterus, the parenchyma of which seems to be powerfully excited by it. It is consequently exhibited in difficult labour, proceeding from inertia of this organ, and in hemorrhages so often fatal, produced by the same cause. It is in America that this remedy has been principally used; it has been of late employed in England and France with great success. This substance is to be administered only when the natural pains have ceased, or when they are too weak to bring on delivery; moreover, it is indispensable that the os tincæ be sufficiently dilated or easily dilatable, before we hazard its exhibition, in order to permit labour to take its natural course.

Dr. W. P. Dewees, an American physician, says that he has the most firm reliance upon the powers of the ergot, and the character of its action is so distinctly marked, that a very little observation will enable us to detect it; that when ergot has been administered with success we find the uterine effort not only more quickly repeated, and more powerfully exerted, but that these efforts are accompanied with less suffering than the same apparent exertions of this organ, when not urged by this drug; and the following are the cardinal rules laid down by Dr. D. for the successful employment of *Secale cornutum*:—

1st. It should never be given before the membranes are ruptured, the os uteri dilated, and the external parts disposed to yield.

2d. It must not be used so long as the natural pains are efficient, and competent to the end.

3d. But should they flag, from any cause, it may be given, provided the labour be a natural labour according to our acceptation of the term "natural labour;" that is, when the head (if well situated), the breech, the feet, or the knees, present.

For, independently of any accident which may complicate the labour, it is sometimes desirable, for the safety of the child, to hasten it when the natural powers are incompetent to this end.

4th. And if the labour be accompanied by any such accident, as flooding, convulsions, syncope, &c. it may sometimes be employed to great advantage, provided rules 1st and 2d are not violated.

5th. It may be used very often with much advantage in every kind of premature labour; and at full time, when the placenta is not thrown off, and the uterus is found in a state of atony.

6th. Where flooding takes place after the rupture of the membranes; the os uteri well dilated; the pains feeble, but the child well situated.

7th. Where the head of the child has been left in the uterus by being separated from its body.

8th. Where the uterus is painfully distended by coagula*.

D. & M. OF ADM. Powder, gr.x. to xxx. suspended in ℥iv. of a proper menstruum. Decoction or infusion, gr.xxx. to xl. in ℔j. of water. A table-spoonful every ten minutes.

§ IV. STIMULANT REMEDIES WHICH ACT ESPECIALLY ON CERTAIN GLANDS, AND WHICH EXCITE ABSORPTION GENERALLY.

The action of the remedies of which we are now going to treat, varies considerably. Thus, although they are general stimulants, more or less energetic, some spend their influence principally upon the thyroid gland, and on the glands of the mammæ; others upon the salivary glands, &c. But they possess a property which is common to both, and that is, of rendering general absorption more active; a property which is peculiarly remarkable in engorgements of the lymphatic ganglia, in encysted tumours, and others which are not of an inflammatory nature, and in serous effusions. It is thus that iodine, properly administered, frequently accomplishes, in a short time, the disappearance of volumnious old tumours, which had not yielded to any other kind of treatment.

What renders these remedies of still greater importance is, the property that a certain number of them possesses of controlling, advantageously, venereal diseases, and of removing, with more or less promptitude, all the unpleasant symptoms attendant on these affections. It is impossible, in the present state of our knowledge, to explain this mode of action; but whatever its cause may be it is generally acknowledged, and substances endowed with these properties are called *antisyphilitic.*

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* We can add our testimony to the many proofs which have been published of the efficacy of this remedy in slow and lingering labours. It is one of the most valuable remedies in the Materia Medica. Only those who have been in the habit of using it can form the least idea of its excellence. It is best given in the form of powder, macerated for a few minutes in hot water.—EDITOR.

These substances are generally given as alteratives, that is, in such small doses as not to produce alvine evacuations, or any very appreciable effects, but to induce, by their slow but continued action, the desired alterations, without causing, however, that violent disturbance which their employment in large doses might produce. But it is always necessary to watch their action with the greatest attention, and to discontinue their exhibition as soon as any unfavourable symptom is manifested; for their influence continues sometimes even after the discontinuance of the remedy.

Iodine. *Iodina. Iodium.* A simple body which exists in nature only in a state of combination, and is principally found in certain fuci and mineral waters.

P. P. It is solid, grayish-black, in scales of a metallic lustre, of a smell similar to that of chlorine, but weaker, of an acrid and warm taste, and of a specific gravity of 4.946.

C. P. Iodine forms acid by combining with oxygen or with hydrogen; water dissolves $\frac{1}{7000}$, and acquires a yellow colour with it. Alcohol, and especially ether, dissolve a good deal more; heated, it melts at 107° Centig. (225° Fahr.), and volatilizes at 175° Centig. (349° Fahr.), in vapours of a fine violet colour. It colours the skin and paper yellow. Finally, it produces a handsome blue colour by combining with starch.

Prep. Treat the warm mother waters of kelp with sulphuric acid, and condense in a receiver the violet vapours which are disengaged; then wash the crystallized scales which have formed in a weak solution of potassa.

Th. E. In large doses iodine is a very energetic irritant poison. In small and continued doses it exercises a general stimulant influence, which, however, affects more particularly the gastro-intestinal, pulmonary, and genital mucous membranes. This effect may be carried to such an extent as to produce an obstinate gastro-enteritis, or symptoms of pulmonary phthisis, characterized by a very rapid emaciation. Besides this action, iodine exercises another very remarkable and almost specific one, which is induced in the thyroid gland, mammary glands, &c. Indeed, it is observable that, in persons who have been under the influence of this remedy, these organs are more or less completely in a state of atrophy, after having been for some time the seat of a very lively inflammatory action.

Dr. Coindet, of Geneva, was the first who demonstrated the utility of this medicine in the treatment of goitre and scrofulous affections. By means of iodine, the resolution of certain engorgements of the lymphatic ganglia, such as scrofulous tumours, old and indolent buboes, &c., has been obtained. Dr. Baron, in his work upon tubercular diseases, asserts that he has exhibited it with success in certain scirrhous tumours of the ovaries and of some other organs, and even in cases of tubercular affections. It is used likewise as a powerful emmenagogue; and, according to the observations of Professor Brera, we can have no doubt of its efficacy in several cases of difficult menstruation. Finally, Dr. Richond has proposed it in the treatment of blenorrhagia, chronic leucorrhœa, and engorgements of the testicle; and asserts that he has derived from its employment most happy results. However, this remedy must always be exhibited with the greatest caution, and its use be immediately discontinued as soon as emaciation begins to occur, which is generally the first indication of its noxious action on the economy, and which action seems to continue for a considerable time after its use has been abandoned *.

Externally, it is exhibited with advantage in similar cases.

D. & M. OF ADM. *Internally*, gr. ¼ to 1, twice a day in pills.——*Tincture*, F. M. (Iodine, 1; alcohol at 35°, 12; twenty drops contain about 1 gr. of iodine ;) gutt.iv. to x. three times a day, in sugar and water. This dose may be increased as far as xxx. and even xl. drops.——*Iodurетted sulphuric ether*, F. M. (Iodine, 1; ether, 6; thirty drops contain 1 gr. of iodine.) Dose, gutt.iv. to x. at most, two or three times a day.

Externally. *Iodine ointment*, BRERA. (Iodine, 1; axungia, 24.) ℈j. in friction. The tincture may be used in the same manner.

HYDRIODATE OF POTASSA. *Hydriodas potassæ*. This salt exists in most of the *Fuci*, in sponges, and in certain mineral waters.

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* When certain properties have been once attributed to a medicine, it generally happens that authors rest satisfied respecting the fact that such properties are absolutely inseparable from it, without inquiring whether effects produced by it, in one or a few instances, may not have been dependent upon some peculiar circumstances connected with those particular cases. It is said by almost every author who has written on the subject, that iodine has a tendency to produce general emaciation, absorption of the breasts of the female, of the testicles of the male, &c. Now, we have administered it in hundreds of cases, and in some of them for months, nay, years, with very short intermissions, but have never, in a single instance, witnessed such an effect produced by the remedy. It is one of the most valuable remedies ever introduced into practice, but its properties either have not been yet *sufficiently* investigated, or if so investigated, they have not been made public. It is best administered in the form of solution of iodurетted hydriodate of potassa.—EDITOR.

Prep. It is by means of distillation that mercury is separated from the other metals with which it is amalgamated.

Th. E. All the mercurial preparations act almost in the same way. In consequence of absorption of their particles, they exercise on the whole economy a stimulant action, which may be carried to such an extent as to produce inflammatory effects. But besides this general influence, mercury acts, in a very decided manner, on the secretory organs, and especially the salivary glands; it is thus that it frequently induces salivation, a fetid breath, an ulcerous inflammation of the mucous membrane of the mouth, &c. Another phenomenon still more inexplicable, is the effect this remedy produces on absorption; it increases the activity of this function, and, under its influence, we occasionally see visceral engorgements and tumours, more or less voluminous, disappear. Finally, the employment of mercurial preparations, when carried too far, induces a succession of very serious symptoms, such as emaciation, general debility, œdema, tremor of the limbs, palsy, ulcerations of the pharynx, and, in a word, a sort of scorbutic marasmus.

Mercury and its different preparations are very much used in medicine, more especially in the treatment of venereal diseases. Their *modus operandi*, in these cases, cannot be explained; but their utility is so far beyond doubt, that they have, for a long time, been considered as specifics in these affections. Advantage is taken of the influence which mercury exercises on absorption and nutrition, in order to reduce chronic engorgements of the viscera without inflammation, white swellings, &c. The action of mercury on the general system, characterized by salivation, emaciation, &c., seems to be followed by good effects in certain local inflammations. Dr. Laennec has employed this medicine with success in the treatment of puerperal peritonitis, and the English and American practitioners administer it daily, not only in similar cases, but in continued cholera morbus, yellow fever, plague, inflammations of the brain and of its meninges, known by the names of cerebral fevers, acute and chronic hydrocephalus. Finally, this metal is used both externally and internally, in certain herpetic, scrofulous and verminous affections.

D. & M. of Adm. *Internally*, water charged with mercurial particles by means of ebullition, ℥j. to ℥iij.——*Hydrargyrum cum creta*, L. (Mercury, ℥iij.; prepared chalk, ℥v.)—D. (Mercury and manna, āā. ℥j.; prepared chalk, ℥ss.)——*Hydrargyrum cum magnesia*, D. (Mercury and manna, āā. ℥j.; magnesia, ℥ss.)—Three grains contain about one of mercury. Dose, from gr.v. to ℈j.; twice a day, in syrup or mucilage.——*Pilulæ hydrargyri*, U. S. (Mercury, conserve of roses, āā. ℥j.; liquorice root, ℥ss.)—Five grains of the mass contain two grains of mercury.—L., D. (Mercury, ʒij.; confection of roses, ʒiij.; liquorice root, ʒj.)—Three grains of the mass contain one of mercury.—E. (Mercury and conserve of roses, āā. ℥j.; starch, ℥ij.)—Four grains of the mass contain one of murcury. Dose, from gr.vj. to gr.viij., twice a day.——*Pilulæ hydrargyri cum rheo*, Guy's H. (Mercurial pill and rhubarb, āā. ʒij.; water as much as necessary, for twenty-four pills. Dose, No. j. to ij., twice a day.——*Mercurial pills*, Paris H. (Mercury and conserve of cynorrhodon, āā. ʒj.; for thirty-six pills, No. ij. to iv. a day, seldom more than vj.——*Pilulæ hydrargyri compositæ*, P. (Mercury, 4; honey, 24; aloes and scammony, āā. 8; cinnamon and mace, āā. 1; for four grain pills, four of which contain about one grain of mercury.) Dose, from gr.xii. to ℈j.——*Beloste's pills*, Paris H. (Mercury, ℥iij.; supertartrate, gr.x.; scammony and jalap, āā. ʒiij.; syrup, q. s.) Dose, from gr.x. to xv., and as a purgative, gr.xxx., in pills.)——*Plenck's gummous mercury*, P. (Mercury, 1; gum Arabic, 3; syrup of opium, 4.)

Externally. *Unguentum hydrargyri*, U. S. (Mercury and axungia, āā. 3 parts; suet, 1 part.)—1 drachm contains 26 grains of mercury.—L., D., P., F. (Mercury and axungia, (with suet or wax,) āā. equal parts.)—1 drachm contains gr.xxx. of mercury.—E. (Mercury and suet, āā. 1 part; lard, 3 parts.)—1 drachm contains gr.xij. of mercury.)——*Unguentum hydrargyri mitius*, L., D. (Stronger mercurial ointment, 1 part; prepared lard, 2 parts.)—P. (Stronger mercurial ointment, 1 part; axungia, 3 parts.)——*Unguentum hydrargyri cinereum*, Pr., Pol., R. (Mercury, 1; hog's lard mixed with a small quantity of suet, 2.)—Den., A. (Mercury, 3; hog's lard and tallow, āā. 1.) These ointments are used in frictions of from ʒss. to ʒij., and sometimes exhibited internally.——*Linimentum hydrargyri*, L. (Stronger mercurial ointment and prepared lard, āā. ℥iv.; camphor, ℥j.; alcohol, ♏xv.; solution of ammonia, f.℥iv.)——*Mercurial liniment*, Paris H. (Strong mercurial ointment and water of ammonia, āā. ʒj.; olive oil, ℥j.), ʒj. in frictions.——*Emplastrum hydrargyri*, E., B., U. S. (Olive oil, pine resin, āā. 1 part; mercury, 3 parts; lead plaster, 6 parts.)—L. (Mercury, ℥iij.; sulphuretted oil, f.ʒj.; lead plaster, ℔j.)——*Emplastrum hydrargyri compositum* seu *emplastrum de Vigo cum mercurio*, P. (Mercury, 95; liquid styrax, 48; simple plaster, 312; wax, resin, and turpentine, āā. 16; gum ammoniac, bdellium, olibanum, and myrrh, āā. 5; saffron, 3; oil of lavender, 2.)——*Emplastrum hydrargyri*, A., R. (Mercury, 6; turpentine, 1; litharge plaster, 24.)—Pr., Pol. (Mercury, 4; wax, 3; turpentine, 2; litharge plaster, 12.)

PROTO-CHLORIDE OF MERCURY. *Hydrargyri proto-chloruretum. Hydrargyri sub-murias mitis* sive *calomelas*, mild submuriate of mercury, or calomel. It is always the product of art.

P. P. This solid, white, semitransparent compound, becomes slightly yellow by exposure to the air and by rubbing; it crystallizes in crossed and prismatic needles, is inodorous, tasteless, and of a specific gravity of 7.17.

C. P. It is formed of mercury 100, and chlorine 7.596. It is completely insoluble in water and alcohol. Heated, it evaporates. It turns black by contact with alkalies and hydro-sulphuric acid. It dissolves in chlorine, and passes to the state of deuto-chloride.

Incomp. Subst. Alkalies, lime-water, sulphurets of potassa and antimony; iron, copper, lead, &c.

Prep. Heat, in close vessels, equal parts of metallic mercury and of deuto-chloride of mercury; The calomel sublimes and condenses in the receiver. It is necessary to purify it, and liberate it from the small quantity of corrosive sublimate which may have escaped decomposition, and passed in vapour with it,

Prep. It is by means
rated from the other me

Th. E. All the mercu
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be carried to such an ex
But besides this general
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fetid breath, an ulcerous
of the mouth, &c. Anc
cable, is the effect this r
creases the activity of t
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mercurial preparations,
sion of very serious sym
bility, œdema, tremor o
pharynx, and, in a word

Mercury and its differ
medicine, more especial
Their *modus operandi*,
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&c. The action of mer
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peral peritonitis, and the
administer it daily, not o
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is used both externally a
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D. & M. of Adm. *Internally*,
of ebullition, ʒj. to ℥iij.——*Hy*
pared chalk, ʒv.)—D. (Mercury
Hydrargyrum cum magnesia, D.
Three grains contain about one o
in syrup or mucilage.——*Pilulæ h*
āā. ℥j.; liquorice root, ℥ss.)—Fiv
cury.—L., D. (Mercury, ʒij.; c
Three grains of the mass contain

[illegible] this end, it must be washed, and then [illegible]

[illegible] of mercury acts upon the intestinal [illegible] purgatives; that is, it provokes in certain [illegible] abundant alvine evacuations. Administered [illegible] it seems to be absorbed, and it then acts like the [illegible] mercurial preparations.

[illegible] *As a purgative*, gr.v. to xv. *As an alterative*, gr.j. to gr.v., [illegible] —*Pilulæ hydrargyri sub-muriatis*, U.S. (Calomel, ʒss.; Castile [illegible] pills.—*Pilulæ hydrargyri sub-muriatis compositæ*, vulgo [illegible] for [illegible] pills.——*Pilulæ* [illegible] L., E. (Calomel and precipitated sulphuret of antimony, āā. ʒj.; [illegible] mucilage, a sufficient quantity.) Dose, from gr.v. to gr.x., [illegible] night and morning.—New York H. (Sub-muriate of mercury, ʒss.; starch, [illegible] opium, ℈iv.; mucilage of gum Arabic, q. s. for pills, No. ccxl.)——*Pilulæ* [illegible] *cum mercurio*, Dev. (Calomel, 4; extract of rhubarb, 8; resin of jalap, [illegible]; oil of orange peel, q. s.)——*Soap and mercury pills*, Paris H. (Calomel and [illegible] medicinal soap, gr.ij.)——*Pilulæ hydrargyri cum ipeca*[illegible] resin of jalap, āā. gr.j.; [illegible], Guy's H. (Calomel, gr.v.; ipecacuanha, gr.x.; conserve of roses, q. s., for ten pills.) No. 1, two or three times a day.——*Dr. Paris's purgative pills.* (Calomel, gr.x.; compound gamboge pills, and compound extract of colocynth, āā. gr.xv.; ginger syrup, q. s.; for 12 pills. No. ij. at night.——*Dr. Paris's anthel*[illegible] (Calomel, gr.v.; gamboge, gr.iij.; mucilage of gum Arabic, q. s.)

Externally, gr.½ to j., in frictions upon the gums, or around the glans penis, as [illegible]——*Lotio hydrargyri nigra, or black wash*, New York H. (Sub-[illegible] lime water, ℔viij.)——*Unguentum hydrargyri sub-mu*[illegible] Guy's H. (Calomel, ʒj.; cerate, ℥i.)——*Resolvent salve*, Paris H. (Ca[illegible] and fresh squill, āā. ʒss.; axungia, ʒij.; otto of roses, gutt.iv.)——*Anti*[illegible] Paris H. (Calomel, ʒi.; flower of sulphur, ʒj.; axungia, ℥j.

Deuto-chloride of Mercury. *Hydrargyri deuto-chloru*[illegible]. *Hydrargyri oxymurias*. Oxymuriate of mercury. Corrosive sublimate. It exists in nature, but in very small quantities. That which is used is always the product of art.

P. P. This compound is found in the shops in the form of circular pieces, white, semitransparent on the edges; convex, smooth, and shining on one side; concave, and presenting a number of small, confused crystals on the other; unalterable in the air, inodorous, of a taste extremely acrid, caustic, and [illegible]. Its specific gravity is 5.398.

C. P. It is composed of mercury, 100; and chlorine, 36. It [illegible] in twenty parts of cold, and three of boiling water, [illegible] then to the state of hydro-chlorate of deutoxide of [illegible]; alcohol, and especially ether, dissolve it still more [illegible]. Heated, it volatilizes without being decomposed, and [illegible] white smoke, of a penetrating smell. It is soluble [illegible] nitric, and hydro-chloric acids, without undergo[illegible]

[illegible] Alkalies and their carbonates, tartar emetic, [illegible] potassa, soap, iron, copper, lead, metallic mer[illegible] vegetable substances, &c.

REP. Heat in close vessels a mixture of four parts of hy-
-chlorate of soda, one part of per-oxide of manganese, and
parts of sulphate of mercury. The deuto-chloride which
ormed, volatilizes and condenses on the superior sides of
vessel.

H. E. In the dose of a few grains, corrosive sublimate is
of the most active poisons. Administered in very small
s, it induces the general phenomena caused by the other
arations of mercury. It is very often used in the treat-
t of venereal diseases, principally of those of long stand-
and of an obstinate character, which are wrongly called
titutional. Its exhibition requires great attention and
ence.

& M. OF ADM. Gr.1/16 to ⅛ in pills, or dissolved in water.——*Corrosive sub-*
pills, PARIS H. (Corrosive sublimate, gr.xx.; starch, ℥ss.; gum Arabic,
water, q. s. for 144 pills, each of which contains one-eighth of a grain of cor-
sublimate.) Dose, from No. j. to iv. a day.——*Pilulæ hydrargyris oximu-*
, GUY'S H. (Sublimate, gr.vijss.; hydro-chlorate of ammonia, gr.x.; boiling
, ʒij.; crumb of bread, q. s. for 40 pills, each contains one-eighth of a grain.)
doses.——*Pilulæ hydrargyri muriatis*, NEW YORK H. (Muriate of mer-
and muriate of ammonia, āā. ℈ij.; distilled water, a sufficient quantity to
ve them; starch, ʒvj.; for 140 pills.)——*Pilulæ hydrargyri compositæ*, NEW
H. (To the above mass add opium, ʒj.; for the same number of pills.)——
yphilitic pills, PARIS H. (Corrosive sublimate, and opium, āā. gr.ij.; extract
k, gr.xl.; pulv. bark, q. s. for 4 pills.) Dose, No. ij. a day.——*Liquor hy-*
ri oximuriatis, L., U. S., *Van Swieten's liquor*, P. (Sublimate, gr.viij.;
l, ℥j.; distilled water, ℥xv. Every ounce contains ½ grain of corrosive sub-
.) Dose, from ʒij. to ℥j. progressively in four ounces of a mucilaginous
uum.——*Aqua muriatis hydrargyri corrosivi*, F. (Corrosive sublimate,
dro-chlorate of ammonia, āā. 1; distilled water, 800; simple syrup, 160.
ounce contains ½ grain of corrosive sublimate.)—PR., POL. (Corrosive sub-
and hydro-chlorate of ammonia, āā. 1; distilled water, 480; honey of
20. This liquor contains gr.j. of corrosive sublimate per ounce.)——
ial ether, CHERON. (Corrosive sublimate, gr.xvj.; sulphuric ether, ℥j.;
tains ½ grain of corrosive sublimate.) Dose, from ʒss. to ʒj.——*Syrup*
urial ether, CHERON. (Mercurial ether, ℥j.; simple syrup, ℔ij. Each
ontains ½ grain of corrosive sublimate.) Dose, from ℥ss. to ℥j., and more,
sively.

nally. Mercurial bath, PARIS H. (Corrosive sublimate, ʒij. to ℥j. gra-
boiling water, ℔cc.)——*Mercurial lotion*. PARIS H. (Corrosive sublimate,
illed water, ℔j.; alkanet root, q. s.——*Lotio hydrargyri muriatis*, NEW
. (Muriate of mercury, gr.viij.; water, f.℥viij.)——*Lotio hydrargyri flava*,
RK H.——Phagedænic water, *Eau phagédénique*, P. (Muriate of mercury,
lime water, ℥viij.)——*Mercurial gargle*, PARIS H. (Corrosive sublimate,
stilled water, ℥iv.; syrup of honey, ℥ss.——*Mercurial injection with opium*,
. (Corrosive sublimate, gr.xij.; distilled water, ℔ij.; Sydenham's lauda-
)——*Cyrillo's salve*, P. (Corrosive sublimate, 1; axungia, 8.) ʒss. to ʒj.,
tion.——*Escharotic troches*, P. (Corrosive sublimate, 1; starch, 2; mu-
gum tragacanth, q. s.)

IODIDE OF MERCURY. *Hydrargyri proto-ioduretum*.
mpound is always the product of art.

It is pulverulent, of a greenish-yellow colour, ino-
of a slight metallic taste.

and in order to obtain this end, it must be washed, and then sublimed anew.

TH. E. Proto-chloride of mercury acts upon the intestinal canal like other purgatives; that is, it provokes in certain doses more or less abundant alvine evacuations. Administered in small doses it seems to be absorbed, and it then acts like the other mercurial preparations.

D. & M. OF ADM. *As a purgative*, gr.v. to xv. *As an alterative*, gr.j. to gr.x., a day in pills.——*Pilulæ hydrargyri sub-muriatis*, U. S. (Calomel, ʒss.; Castile soap, ℈j.; for 30 pills.)——*Pilulæ hydrargyri sub-muriatis compositæ*, vulgo *Plummer's pills*, L., E. (Calomel and precipitated sulphuret of antimony, āā ʒj.; resin guaiacum, ʒij.; mucilage, a sufficient quantity.) Dose, from gr.v. to gr.x., given night and morning.—NEW YORK H. (Sub muriate of mercury, ʒss.; starch, ʒj.; opium, ℈iv.; mucilage of gum Arabic, q. s. for pills, No. ccxl.)——*Pilulæ purgantes cum mercurio*, DEN. (Calomel, 4; extract of rhubarb, 8; resin of jalap, 1; oil of orange peel, q. s.)——*Soap and mercury pills*, PARIS H. (Calomel and resin of jalap, āā. gr.j.; medicinal soap, gr.ij.)——*Pilulæ hydrargyri cum ipecacuanha*, GUY'S H. (Calomel, gr.v.; ipecacuanha, gr.x.; conserve of roses, q. s., for ten pills.) No. 1, two or three times a day.——*Dr. Paris's purgative pills.* (Calomel, gr.x.; compound gamboge pills, and compound extract of colocynth, āā. gr.xv.; ginger syrup, q. s.; for 12 pills.) No. ij. at night.——*Dr. Paris's anthelmintic bolus.* (Calomel, gr.v.; gamboge, gr.viij.; mucilage of gum Arabic, q. s.) For a bolus.

Externally, gr.½ to j., in frictions upon the gums, or around the glans penis, as anti-syphilitic.——*Lotio hydrargyri nigra, or black wash*, NEW YORK H. (Submuriate hydrargyri, ʒj; lime water, f.℥viij.)——*Unguentum hydrargyri sub-muriatis*, GUY'S H. (Calomel, ʒj.; cerate, ℥j.)——*Resolvent salve*, PARIS H. (Calomel and fresh squill, āā. ʒss.; axungia, ʒij.; otto of roses, gutt.iv.)——*Anti-herpetic salve*, PARIS H. (Calomel, ʒj.; flower of sulphur, ʒj.; axungia, ℥j.

DEUTO-CHLORIDE OF MERCURY. *Hydrargyri deuto-chloruretum. Hydrargyri oxymurias.* Oxymuriate of mercury. Corrosive sublimate. It exists in nature, but in very small quantities. That which is used is always the product of art.

P. P. This compound is found in the shops in the form of circular pieces, white, semitransparent on the edges; convex, smooth, and shining on one side; concave, and presenting a number of small, confused crystals on the other; unalterable in the air, inodorous, of a taste extremely acrid, caustic, and metallic. Its specific gravity is 5.398.

C. P. It is composed of mercury, 100; and chlorine, 36. It dissolves in twenty parts of cold, and three of boiling water, and passes then to the state of hydro-chlorate of deutoxide of mercury; alcohol, and especially ether, dissolve it still more easily. Heated, it volatilizes without being decomposed, and produces a white smoke, of a penetrating smell. It is soluble in sulphuric, nitric, and hydro-chloric acids, without undergoing decomposition.

INCOMP. SUBST. Alkalies and their carbonates, tartar emetic, sulphuret of potassa, soap, iron, copper, lead, metallic mercury, tanning vegetable substances, &c.

Prep. Heat in close vessels a mixture of four parts of hydro-chlorate of soda, one part of per-oxide of manganese, and five parts of sulphate of mercury. The deuto-chloride which is formed, volatilizes and condenses on the superior sides of the vessel.

Th. E. In the dose of a few grains, corrosive sublimate is one of the most active poisons. Administered in very small doses, it induces the general phenomena caused by the other preparations of mercury. It is very often used in the treatment of venereal diseases, principally of those of long standing, and of an obstinate character, which are wrongly called constitutional. Its exhibition requires great attention and prudence.

D. & M. of Adm. Gr.⅛ to ½ in pills, or dissolved in water.——*Corrosive sublimate pills*, Paris H. (Corrosive sublimate, gr.xx.; starch, ℥ss.; gum Arabic, ʒij.; water, q. s. for 144 pills, each of which contains one-eighth of a grain of corrosive sublimate.) Dose, from No. j. to iv. a day.——*Pilulæ hydrargyris oximuriatis*, Guy's H. (Sublimate, gr.vijss.; hydro-chlorate of ammonia, gr.x.; boiling water, ʒij.; crumb of bread, q. s. for 40 pills, each contains one-eighth of a grain.) Same doses.——*Pilulæ hydrargyri muriatis*, New York H. (Muriate of mercury, and muriate of ammonia, āā. ℈ij.; distilled water, a sufficient quantity to dissolve them; starch, ʒvj.; for 140 pills.)——*Pilulæ hydrargyri compositæ*, New York H. (To the above mass add opium, ʒj.; for the same number of pills.)——*Anti-syphilitic pills*, Paris H. (Corrosive sublimate, and opium, āā. gr.ij.; extract of bark, gr.xl.; pulv. bark, q. s. for 4 pills.) Dose, No. ij. a day.——*Liquor hydrargyri oximuriatis*, L., U. S., *Van Swieten's liquor*, P. (Sublimate, gr.viij.; alcohol, ℥j.; distilled water, ℥xv. Every ounce contains ½ grain of corrosive sublimate.) Dose, from ʒij. to ℥j. progressively in four ounces of a mucilaginous menstruum.——*Aqua muriatis hydrargyri corrosivi*, F. (Corrosive sublimate, and hydro-chlorate of ammonia, āā. 1; distilled water, 800; simple syrup, 160. Every ounce contains ½ grain of corrosive sublimate.)—Pr., Pol. (Corrosive sublimate, and hydro-chlorate of ammonia, āā. 1; distilled water, 480; honey of roses, 20. This liquor contains gr.j. of corrosive sublimate per ounce.)——*Mercurial ether*, Chéron. (Corrosive sublimate, gr.xvj.; sulphuric ether, ℥j.; ʒj contains ½ grain of corrosive sublimate.) Dose, from ʒss. to ʒj.——*Syrup of mercurial ether*, Chéron. (Mercurial ether, ℥j.; simple syrup, ℔ij. Each ounce contains ½ grain of corrosive sublimate.) Dose, from ℥ss. to ℥j., and more, progressively.

Externally. *Mercurial bath*, Paris H. (Corrosive sublimate, ʒij. to ℥j. gradually; boiling water, ℔cc.)——*Mercurial lotion*, Paris H. (Corrosive sublimate, ʒj.; distilled water, ℔j.; alkanet root, q. s.——*Lotio hydrargyri muriatis*, New York H. (Muriate of mercury, gr.viij.; water, f.℥viij.)——*Lotio hydrargyri flava*, New York H.——Phagedænic water, *Eau phagédénique*, P. (Muriate of mercury, gr.viij.; lime water, ℥viij.)——*Mercurial gargle*, Paris H. (Corrosive sublimate, gr.ij.; distilled water, ℥iv.; syrup of honey, ℥ss.——*Mercurial injection with opium*, Paris H. (Corrosive sublimate, gr.xij.; distilled water, ℔ij.; Sydenham's laudanum, ℥j.)——*Cyrillo's salve*, P. (Corrosive sublimate, 1; axungia, 8.) ʒss. to ʒj., for a friction.——*Escharotic troches*, P. (Corrosive sublimate, 1; starch, 2; mucilage of gum tragacanth, q. s.)

Protiodide of Mercury. *Hydrargyri proto-ioduretum*. This compound is always the product of art.

P. P. It is pulverulent, of a greenish-yellow colour, inodorous, of a slight metallic taste.

C. P. It is composed, according to Thomson, of mercury, 250, and iodine, 156. It is unalterable in the air, but is decomposed by light; insoluble in water and alcohol, and soluble in ether. Heated, it volatilizes in yellow fumes, which, coming in contact with copper plates, produce metallic mercury.

Prep. It is obtained by pouring a solution of hydriodate of potassa into a solution of one part of proto-nitrate of mercury in four parts of distilled water, until no more precipitate is produced. The precipitate is washed with care, in order to liberate it from all the nitrate which may have escaped decomposition.

Th. E. See below Deutiodide of Mercury.

D. & M. of Adm. Internally, gr.¼ to ½, in pills.——*Pills of protiodide of mercury*, F. M. (Protiodide of mercury, gr.j.; extract of juniper, gr.xij.; liquorice, q. s. for 8 pills.) Dose, from No. 4 to eight a day.——*Ether of protiodide of mercury*, F. M. (Protiodide of mercury, 1 part; sulphuric ether, 48 parts.) 26 drops contain about one-eighth of iodide, (gutt.v. to xv. in distilled water.)

Externally. Salve of protiodide of mercury, F. M. (Protiodide of mercury, 1 part; axungia, 44.)—Paris H. (Protiodide of mercury, ʒss.; axungia, ℥jss.; essential oil of bergamot, gutt.xv.; every drachm contains gr.iij. of mercurial iodide.) In very small quantity upon obstinate venereal ulcers.

Deutiodide of Mercury. *Hydrargyri deuto-ioduretum.* It is not found in nature.

P. P. This is a red powder, which, submitted to heat, turns yellow, melts, and acquires an unctuous appearance; it afterwards volatilizes in reddish-yellow fumes, condensing in rhomboidal scales of a golden-yellow colour, which, on cooling, become red.

C. P. It contains 250 of mercury, and 312 of iodine. It is insoluble in water, but soluble in alcohol, ether, solution of hydriodate of potassa, and of mercurial salts. Air has no action upon it, but light decomposes it.

Incomp. Subst. Its alcoholic solution is decomposed by water which has not been distilled.

Prep. It is obtained by mixing a solution of 100 of hydriodate of potassa with another of 70 parts of corrosive sublimate. The precipitate is collected and washed with care, and then dried.

Th. E. The two compounds we have just noticed, that is, the protiodide and deutiodide of mercury, combine the energetic properties of the two elements of which they are formed. To Dr. Biett we are indebted for their introduction into the materia medica, for they had been merely mentioned previously by Dr. Coindet, of Geneva. It is principally in scrofulous affections complicated with syphilis, in engorgements of the ganglia, and in chronic ulcerations produced by constitutional venereal disease, that these remedies are used. They sometimes produce salivation, and their action being very energetic, especially that of the deutiodide, their employment requires the greatest caution.

D. & M. OF ADM. *Internally*, gr. one-sixteenth to one-fourth, in pills.——*Pills of deutiodide of mercury*, F. M. (Deutiodide of mercury, gr.j.; extract of juniper, gr.xij.; pulverized liquorice, q. s. for 8 pills.) Dose, from No. ij. to iv. a day.)——*Tincture of deutiodide of mercury*, F. M. (Deutiodide of mercury, 1.; alcohol of 36° of Baumé's areometer, 48 ; 26 drops contain one-eighth of a grain of iodide.) Dose, from gutt.x. to gutt.xx. in distilled water.——*Ethereal tincture of deutiodide of mercury*, F. M. (Deutiodide and ether, same proportions as above.) Dose, from gutt.v. to x.

Externally. *Ointment of deutiodide of mercury*, F. M. (Deutiodide of mercury, 1 part ; axungia, 48.)—PARIS H. (Deutiodide of mercury, gr.xv.; axungia, ℥ij.; essential oil of bergamot, gutt.xv.) In small quantities in obstinate venereal ulcerations.

RED SULPHURET OF MERCURY. *Hydrargyri sulphuretum rubrum*. Cinnabar. Vermilion. It is found abundantly in nature, but in a state of impurity. It is prepared by artificial means for commercial purposes.

P. P. Cinnabar is in amorphous masses of different sizes, composed of a great number of crystalline needles, disposed in parallel and contiguous rows, of a violet colour, changing to a lively red by friction or pulverization; its specific gravity is 10.218.

C. P. It is composed of mercury, 100; and sulphur, 15.88. It is unalterable in the air, insoluble, and volatile at a moderate heat. It is decomposed at a high temperature, and is transformed into sulphurous acid and metallic mercury.

PREP. Let mercury, much divided by means of a chamois skin, fall into melted sulphur, bruise the melted mixture, and sublime it once or twice by a moderate heat.

TH. E. Red sulphuret of mercury was formerly exhibited internally in diseases of the skin, gout, and chronic rheumatism. It is now used only externally, in fumigations in several chronic affections of the skin, in cases of syphilitic exostosis, in obstinate ulcers of the same nature, &c. Dr. Biett uses it with much success in *Prurigo pedicularis*.

D. & M. OF ADM. *Internally*, gr.x. to ℈j. in pills, or incorporated in an electuary. *Stahl's temperant powder*, P. (Sulphuret of mercury, 2; nitrate and sulphate of potassa, āā. 9.) Dose, from gr.vj. to ℈j,

Externally. *Ointment of red sulphuret of mercury*, PARIS H. (Sulphuret of mercury, ʒjss.; hydro-chlorate of ammonia, ʒss.; rose water, ʒj.; axungia, ʒij.) Fumigations, ʒij. to ʒiv., in the apparatus for sulphureous fumigations, or upon an iron plate heated red hot.

BLACK SULPHURET OF MERCURY. *Hydrargyri sulphuretum nigrum*, or Ethiops mineral, is nothing more than a mixture of red sulphuret and metallic mercury. It is in very fine powder, of a violet black colour, inodorous, tasteless, and insoluble. It was formerly employed as a diaphoretic and vermifuge : it is now seldom used, except externally, in the form of salve, as anti-psoric. The dose, internally, is from gr.v. to ℈j. It enters into the composition of the *Mercurial vermifuge powder*, P. (*Pulvis de tribus*[*] and black sulphuret of mercury, āā. equal parts in weight.)

Cyanuret of Mercury. *Hydrargyri cyanuretum* seu *prussias*. Prussiate of mercury. It is always the product of art.

P. P. When perfectly neutral, this compound is colourless, crystallizes in quadrangular prisms, with an oblique fracture, of a very styptic and disagreeable taste, inodorous, and of a considerable specific gravity.

C. P. It is composed of mercury, 100, and cyanogen, 26.089 in weight. It dissolves in cold, and still better in boiling water. This menstruum yields it to ether. Heated, it melts, turns black, and is partially decomposed.

Prep. Boil two parts of Prussian blue with one part of deutoxide of mercury, in water.

Th. E. Cyanuret of mercury is a corrosive poison, almost as deleterious as the deuto-chloride of this metal. This remedy has, however, been recently introduced into the materia medica, and several practitioners, among whom are Drs. Cullerier the nephew, Gilbert, and Professor Chaussier, have administered it with success in obstinate venereal diseases. Dr. Biett has exhibited it with advantage in cases of humid squamous tetters, attended with violent itching. Its administration requires the greatest prudence, on account of its poisonous properties.

D. & M. of Adm. Gr. one-eighth to one-sixth a day, in pills. *Solution of cyanuret of mercury.* (Cyanuret of mercury, ℈j.; distilled water, ℔ij. ; one ounce contains gr.⅚ of cyanuret.) Dose, from half an ounce to one in a mucilaginous drink. *Ointment of cyanuret of mercury*, Paris H. (Cyanuret of mercury, gr.xvj.; axungia, ℥j.; essence of lemon, gutt.xv.)

Black Oxide of Mercury. *Oxidum hydrargyri nigrum.* Protoxide of mercury. It is not found in nature.

P. P. It is in the form of a black powder, very heavy, inodorous, of a harsh taste. By being compressed and examined with attention, globules of metallic mercury may be perceived in it.

C. P. This substance, according to Guibourt, is a mixture of deutoxide and metallic mercury, extremely divided. It is insoluble in water, but it dissolves in nitric acid. Heated, it is completely reduced to vapour.

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[*] Jalap and scammony, āā. 1 ; super-tartrate of potassa, 2.

PREP. It is obtained by pouring, drop by drop, into a solution of caustic potassa, one part of pure proto-nitrate of mercury dissolved in sixteen parts of distilled water, very slightly acidulated with nitric acid; otherwise, the proto-nitrate would be transformed into a nitrate with an excess of acid, and into an insoluble yellow sub-nitrate. In order to be more certain of obtaining a very black oxide, it is proper that the solutions from which it is precipitated should contain a small excess of alkali. This oxide is also prepared, according to the English and American Dispensatories, by boiling sub-muriate of mercury in lime water[*]. The precipitates must be washed and dried with a moderate heat.

GREY OXIDE OF MERCURY. *Oxidum hydrargyri cinereum.* Sub-proto-nitrate of mercury and ammonia. Hahnemann's soluble mercury. This oxide is obtained by pouring liquid ammonia into a solution of pure proto-nitrate of mercury.

TH. E. These oxides are but very seldom used; however, German practitioners still exhibit them in some cases in which the employment of mercury, in a state of great division, is indicated. They think that these preparations do not provoke salivation so easily as the others. However, as their composition is apt to vary, so their effects are uncertain.

D. & M. OF ADM. *Internally.* Gr.½ to gr v. a day, in pills. *Hahnemann's pills*, PARIS H. (Grey oxide of mercury, ℈j.; gum Arabic and sugar, āā. ʒss.; for 32 pills.) Dose, from No. iij. to iv. a day.

Externally. *Unguentum oxidi hydrargyri cinerei*, E., U. S. (Black oxide of mercury, 1; axungia, 3.) In frictions, ʒss. to ʒj.

PROTO-NITRATE OF MERCURY. *Hydrargyri proto-nitras.* This salt is always the product of art.

P. P. It is in the form of prismatic crystals, white, of an acrid and styptic taste, inodorous, and very heavy.

C. P. Proto-nitrate of mercury is composed of nitric acid, 100, and protoxide of mercury, 388.73. It generally reddens litmus. Dissolved in water, it decomposes and forms a super-proto-nitrate, remaining in solution, and an insoluble sub-proto-nitrate, which precipitates in the form of a greenish-yellow powder. Heated, it changes to a deutoxide, which is reduced, if the heat be sufficiently high.

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[*] Mr. T. Evans, of Philadelphia, has proposed the following process for the preparation of this oxide. (Sublimed sub-muriate of mercury, ℥iv.; pure caustic potassa, ℥iv.; distilled water, ℔j.) Dissolve the potassa in water, mix the sub-muriate with this solution, and shake them frequently. Pour off the liquid and wash the precipitate with distilled water until the muriate of potassa is totally removed; then dry the residuum with a very gentle heat. This preparation Mr. Evans considers as being superior to those of the English and American Dispensatories.

Prep. Dissolve 200 parts of mercury in 180 parts of nitric acid at 25°. When no more nitrous vapours are disengaged, add 100 parts of warm distilled water, and subject the liquor to a slight ebullition. Then decant the liquor, and soon after crystals will begin to form. By evaporating the mother-waters, purer crystals will be obtained. The purity of the proto-nitrate of mercury may be ascertained by the following characters :—its solution is entirely decomposed by the muriates of potassa or soda, and the filtered liquor does not form a yellow precipitate with potassa, or a black one with hydro-sulphuric acid.

Th. E. It is very seldom employed internally; when used it is in conjunction with syrup as an anti-syphilitic. Externally, it is used as a stimulant, detersive, and escharotic.

D. & M. of Adm. *Internally. Syrupus nitratis hydrargyri*, or *Dr. Belet's syrup*. (Nitrate of mercury, 3 parts; nitric ether, 1 part; simple syrup, 256 parts.) One ounce contains rather more than six grains of nitrate; the dose is from ʒij. to ʒiv. in a mucilaginous menstruum.

Externally. Liquor mercurialis, P. (Mercury, 4; nitric acid, 3; distilled water, 30 parts.)

At the Hôtel Dieu and St. Louis' hospitals, a solution of crystallized proto-nitrate of mercury in eight parts of nitric acid, under the name of SUPER-NITRATE OF MERCURY, *(Nitrate de mercure acide.)* It is a transparent, colourless liquid, which turns green by the action of light, inodorous, and of a metallic and caustic taste. This super-nitrate of mercury is one of the most energetic caustics, which seems, at the same time, to act in a peculiar manner upon the tissues to which it is applied. It changes, as it were, their mode of vitality. It is daily used in the above-mentioned hospitals for spreading tetters, cancerous ulcers of the skin, and even those of the neck of the womb. Dr. Goddard, to whom we are indebted for these details, thinks that it is preferable, in a great number of cases, to arsenical preparations, because it is not commonly absorbed; and, besides, it seems to act in a more certain manner. It is applied to the diseased part with a brush, and covered over with lint, which is afterwards soaked with the same caustic liquid.

D. & M. of Adm *Unguentum hydrargyri nitratis fortius*, E., U. S. (Mercury, 1 part; nitric acid, 2 parts; olive oil, 9 parts; lard, 3 parts. L. (Mercury, ℥j.; nitric acid, f.ʒxi.; prepared lard, ℥vj.; olive oil, ℥iv.) D., F. (Mercury, ʒj.; nitrous acid, ℥ij.; olive oil, Oj.; lard, ℥iv.) P. (Mercury, 2; nitric acid, 3; lard, 32.——*Unguentum hydrargyri nitratis mitius*, E., U. S. (This ointment is made in the same manner as the stronger ointment, with a triple proportion of hog's lard and sweet oil.)

Acetate of Mercury, *Hydrargyri acetas*, is in the form of crystalline scales, white, but turning black by exposure to light; of an acrid and metallic taste, and almost insoluble in water and alcohol. It is prepared by treating the deutoxide of mercury with acetic acid, and crystallizing the liquor. This remedy is seldom employed at present; it enters into the composition of some officinal preparations, and amongst them are *Keyser's anti-syphilitic pills*. (Acetate of mercury, ℥ij.; sugar, ℥vj.; gum arabic, ℥ss.; mucilage, q. s. for 1 gr. pills, which contains one-fourth of acetate of mercury.) Dose, from two to four a day.

The **Sub-deuto-sulphate of Mercury**, or **Turpeth Mineral**, is yellow; insoluble in water, and decomposable by heat. It was once employed as an emetic and a diaphoretic, but at present it is almost discarded. It enters, however, into the composition of several anti-herpetic ointments; such are *Cullerier's anti-herpetic ointment*, Paris H. (Turpeth mineral and laudanum, āā. ʒj.; sublimed sulphur, ʒss.; axungia, ℥j.); *Turpeth mineral ointment*, Paris H. (Turpeth mineral, ʒij.; axungia, ℔ij.); which is exhibited with advantage, in friction, in cases of slightly inflammatory tetters.

Chloride of Gold. *Auri chloruretum. Auri murias.* Muriate of gold. This compound is always the product of art.

P. P. It is under the form of small crystalline needles, of a fine yellow colour, inodorous, of a styptic and very disagreeable taste. It is deliquescent only when it contains an excess of hydro-chloric acid.

C. P. The chloride of gold is very soluble in water, to which it gives a yellow colour. It reddens litmus; vegetable and animal substances are coloured by it of a violet colour. With a gentle heat it is changed into a proto-chloride; and at a higher temperature it is decomposed, and leaves a residuum of metallic gold.

Incomp. Subst. The acid, gummous, saccharine and extractive vegetable juices, alkalies, &c.

Prep. Dissolve one part of pure gold in three of nitro-muriatic acid; evaporate with a gentle heat, and let it crystallize.

Th. E. According to Professor Orfila's experiments, the preparations of gold, and especially that which is the subject of this article, in large doses, act upon the system in the same manner as the corrosive poisons. In small doses, according to Dr. Chrestien, of Montpellier, they are endowed with general stimulant properties, more energetic than those of the corrosive sublimate, and without acting as powerfully upon the salivary glands. These preparations, once so much used and highly spoken of by alchemists, had completely fallen into oblivion, when, in 1810, Dr. Chrestien proposed their employment in constitutional syphilitic diseases in which mercury had failed, scrofulous and herpetic affections, goitre, scirrhous tumours, &c. Dr. Cullerier, the nephew, and other practitioners, have exhibited the preparations of gold with various results. They may, however, prove very useful under several circumstances, but their employment requires the greatest circumspection, on account of their very deleterious properties. They are commonly administered in frictions upon the gums and tongue. This method seems preferable, inasmuch as by it the salt of gold is not so apt to be decomposed.

D. & M. of Adm. *Internally*, gr. one-twentieth to one-tenth, a day, in pills with starch, or in solution in distilled water. In frictions, in the interior of the mouth, gr. one-sixteenth to one-sixth, mixed with ten, twelve, or fifteen times its weight of lycopodium, or starch.

Chloride of Gold and Sodium. *Auri at sodii chloruretum.* Muriate of gold and soda, a triple combination, which does not exist in nature.

P. P. This compound is in the form of prismatic, quadrangular, and elongated crystals, deliquescent, of a very lively yellow colour.

C. P. According to M. Figuier it is composed of 69.3 of chloride of gold, 14.1 of chloride of sodium, and 16.6 of water. It is very soluble in water.

Prep. It is obtained by dissolving four parts of gold in nitromuriatic acid, evaporating this solution, and treating it afterwards with water, containing in solution one part of chloride of sodium. By a well-managed evaporation it deposits crystals.

Th. E. The same as those of the preceding; Dr. Chrestien, however, employs it more frequently.

D. & M. of Adm. Gr. one-twentieth to one-tenth in pills. *Pills of chloride of gold and sodium*, Chrestien. (Chloride of gold and sodium, gr.j.; extract of mezereon, ʒij.; for sixty pills, each of which contains one-sixtieth of triple chloride. (Dose, No. j. to viij. a day.——*Powder of muriate of gold and soda*, Figuier. (Chloride of gold and sodium, gr.$\frac{2}{3}$; orris root, gr.ij.$\frac{1}{4}$; for fifteen doses.) No. j. in frictions upon the tongue and gums.——*Ointment of muriate of gold and soda*, F. M. (Muriate of gold and soda, gr. one-tenth; axungia, gr.36.), to be applied on the surface, previously deprived of the skin by means of a small blister.

The Deutoxide of Gold, *Auri deutoxidum*, is likewise employed in medicine. It is pulverulent, of a brown-violet colour when dry; yellow in the state of hydrate; insoluble, and very easily reduced by heat, or by admixture with a substance having a great affinity to oxygen. It is obtained by treating the chloride of gold, dissolved in water, with carbonate of potassa. Dr. Chrestien administers it principally in scrofula and lymphatic engorgements. *Pills of oxide of gold*, F. M. (Oxide of gold, gr.vj.; extract of mezereon, ʒij.; for 60 pills, each of them containing gr.$\frac{1}{10}$ of oxide.) Dose, from No. ij. to x. a day.

Finally, the **Metallic Gold**, *Aurum*, minutely divided by means of mercury, has been recommended by Dr. Niel as a substitute for the other preparations of this metal. When the state of the mouth does not admit of its employment in frictions, he administers it by the endermic method; that is, applied in the form of a salve on a part deprived of the epidermis. *Gold ointment*, F. M. (Gold minutely divided, gr.j.; axungia, gr.xxxvi.)

Hydro-chlorate of Platinum and Soda has been employed by Dr. Cullerier in the same cases and manner as the muriate of gold and soda, and with the same results. It is now out of use.

Chloride of Barium. *Barii chloruretum* seu *Barytæ murias*. Muriate of baryta. It is not found in nature.

P. P. This chloride crystallizes in four-sided prisms, flat, transparent, decrepitating in the fire, unalterable in the air, of a very bitter, sharp, and nauseous taste. Its specific gravity is 2.8257.

C. P. It is composed of baryta 211.43, and chlorine 100. It is soluble in four parts of cold, and two parts of boiling water, and is then converted into the state of hydro-chlorate. Heated, it melts without decomposing. Sulphuric acid and the sulphates decompose it rapidly.

Incomp. Subst. The alkaline and metallic sulphates, and nitrates; the phosphates, and carbonates.

Prep. By melting together some sulphate of baryta and chloride of calcium, which are transformed into a sulphate of lime and a chloride of barium, and separating them by means of water, which dissolve the latter only.

Th. E. In large doses this salt is a violent poison. The symptoms which it then produces depend, in a great measure, on its local action, but principally on the influence it exercises on the nervous system. Employed in very small doses it seems capable of being useful in scrofulous diseases, scirrhous affections, dropsy, &c. It has been employed as an anthel-

mintic. It is now very seldom administered, and its exhibition requires the greatest prudence, on account of its deleterious properties.

D. & M. OF ADM. Gr.¼ to ⅓ in a gummous menstruum.——*Solution of muriate of baryta*, P. (Chloride of barium, 1; distilled water, 5.)——*Solutio muriatis barytæ*, E. (Chloride of barium, 1; distilled water, 3.) Dose, from gutt.ij to gutt.x.——*Liquor terræ ponderosæ salitæ*, DEN. (Chloride of barium, 1; distilled water, 48; Эj. contains gr.⅙ of muriate.) Dose, from gutt.vj. to Эj., in a mucilaginous mixture.

Externally, as a stimulant and a weak escharotic, in lotions, on scrofulous ulcers; but it must be used with caution, as it is easily absorbed.

HYDRO CHLORATE OF LIME. *Calcis hydro-chloras.* It exists in materials containing saltpetre, and in the waters of several springs.

P. P. It crystallizes in six-sided prisms, striated, and terminated in pyramids; very deliquescent; of an acrid, bitter, and very sharp taste.

C. P. It is composed of lime 51.90, and hydro-chloric acid 48.10. It is very soluble in water. Heated, it melts, liberates a small quantity of acid, and changes into a chloride of calcium, under the form of a coarse grey powder, attracting powerfully the moisture of the atmosphere, and which is composed of 42.61 of chlorine, and 37.59 of calcium.

INCOMP. SUBST. The sulphuric, nitric, phosphoric, and boracic acids, and their salts; the alkalies, and their carbonates, &c.

PREP. By treating carbonate of lime by liquid hydro-chloric acid.

TH. E. This salt exercises a stimulant influence on the whole economy, but it acts more particularly upon the lymphatic glands. Its mode of action is analagous to that of muriate of baryta; but it is not so poisonous as the latter, and it is, consequently, to be preferred to it. It is used to discuss scrofulous affections, lymphatic engorgements of the glands, in cases of general debility, &c. In large doses it is purgative. It is now very seldom used.

D. & M. OF ADM. Gr.vj. to ʒj., dissolved in water.——*Liquor calcis muriatis*, L. (Muriate of lime, 2; distilled water, 3.) Dose, from gutt.xxx. to ʒj., in two ounces or more of water, two or three times a day.

§ V. STIMULANT REMEDIES, THE ACTION OF WHICH IS ESPECIALLY SPENT UPON THE NERVOUS SYSTEM.

As the *modus operandi* of the stimulant substances which act principally upon the nervous system is very various, it would be difficult to speak of them in a general way. In fact, both

alcohol and nux vomica belong to this class; but their effects, as is well known, have no resemblance whatever. There is, however, a certain number of these remedies which have a great analogy with respect to their mode of action, and which seem to form a tolerably natural group. These are remedies, the influence of which on the nervous system seems to have the power of abating the morbid state of the functions of this system, manifested by irregular and convulsive motions, called spasms, or spasmodic motions. We shall therefore place them together at the end of this chapter, under the head *Antispasmodics*, and thus] placed they will form an easy introduction to the study of narcotics, to which class they are very nearly related.

MINERAL KINGDOM.

Phosphorus. *Phosphorus.* A simple body, existing abundantly in nature, in the state of phosphoric acid combined with lime, in certain minerals found in Spain, and in the bones of animals generally. It is also a constituent part of several animal substances, such as the brain and nervous pulp, the roes of fishes, &c.

P. P. It is solid, generally in the form of sticks of the size of a quill, semi-transparent, flexible, easily cut, of a yellowish-white, tasteless, of a peculiar garlic smell, and of a specific gravity of 1.77. It is luminous in the dark, when exposed to the air.

C. P. Although phosphorus has a great affinity for oxygen, still it is without action upon this gas at the common temperature and atmospheric pressure; but, if the temperature is risen, it absorbs it rapidly, and burns with a vivid light, producing very thick white fumes, which consist of phosphoric acid. By diminishing the atmospheric pressure, it combines with oxygen, but this action operates slowly. Exposed in the air, it acts in the same way, produces white fumes of a garlic smell, and absorbs oxygen by degrees, but combustion becomes instantaneous if the temperature be higher. Heated, it melts at 43° Centig. (110° Fahr.), at a higher temperature it volatilizes. Light reddens it, even when placed in a vacuum. It is insoluble in water, but dissolves in alcohol, ether, and oils. It combines with a great number of bodies, and forms phosphurets.

Incomp. Subst. Water precipitates it from its alcoholic and ethereal solutions.

Prep. It is obtained by decomposing super-phosphate of lime by charcoal. It is purified by melting it in boiling water,

mintic. It is now very seldom administered, and its exhibition requires the greatest prudence, on account of its deleterious properties.

D. & M. OF ADM. Gr.¼ to ⅓ in a gummous menstruum.——*Solution of muriate of baryta*, P. (Chloride of barium, 1; distilled water, 5.)——*Solutio muriatis barytæ*, E. (Chloride of barium, 1; distilled water, 3.) Dose, from gutt.ij. to gutt.x.——*Liquor terræ ponderosæ salitæ*, DEN. (Chloride of barium, 1; distilled water, 48; ℈j. contains gr.⅓ of muriate.) Dose, from gutt.vj. to ℈j., in a mucilaginous mixture.

Externally, as a stimulant and a weak escharotic, in lotions, on scrofulous ulcers; but it must be used with caution, as it is easily absorbed.

HYDRO CHLORATE OF LIME. *Calcis hydro-chloras.* It exists in materials containing saltpetre, and in the waters of several springs.

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C. P. It is composed of lime 51.90, and hydro-chloric acid 48.10. It is very soluble in water. Heated, it melts, liberates a small quantity of acid, and changes into a chloride of calcium, under the form of a coarse grey powder, attracting powerfully the moisture of the atmosphere, and which is composed of 42.61 of chlorine, and 37.59 of calcium.

INCOMP. SUBST. The sulphuric, nitric, phosphoric, and boracic acids, and their salts; the alkalies, and their carbonates, &c.

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PREP. It is obtained by decomposing super-phosphate of lime by charcoal. It is purified by melting it in boiling water,

mintic. It is now very seldom administered, and its exhibition requires the greatest prudence, on account of its deleterious properties.

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Externally, as a stimulant and a weak escharotic, in lotions, on scrofulous ulcers; but it must be used with caution, as it is easily absorbed.

HYDRO CHLORATE OF LIME. *Calcis hydro-chloras*. It exists in materials containing saltpetre, and in the waters of several springs.

P. P. It crystallizes in six-sided prisms, striated, and terminated in pyramids; very deliquescent; of an acrid, bitter, and very sharp taste.

C. P. It is composed of lime 51.90, and hydro-chloric acid 48.10. It is very soluble in water. Heated, it melts, liberates a small quantity of acid, and changes into a chloride of calcium, under the form of a coarse grey powder, attracting powerfully the moisture of the atmosphere, and which is composed of 42.61 of chlorine, and 37.59 of calcium.

INCOMP. SUBST. The sulphuric, nitric, phosphoric, and boracic acids, and their salts; the alkalies, and their carbonates, &c.

PREP. By treating carbonate of lime by liquid hydro-chloric acid.

TH. E. This salt exercises a stimulant influence on the whole economy, but it acts more particularly upon the lymphatic glands. Its mode of action is analagous to that of muriate of baryta; but it is not so poisonous as the latter, and it is, consequently, to be preferred to it. It is used to discuss scrofulous affections, lymphatic engorgements of the glands, in cases of general debility, &c. In large doses it is purgative. It is now very seldom used.

D. & M. OF ADM. Gr.vj. to ʒj., dissolved in water.——*Liquor calcis muriatis*. L. (Muriate of lime, 2; distilled water, 3.) Dose, from gutt.xxx. to ʒj., in two ounces or more of water, two or three times a day.

§ V. STIMULANT REMEDIES, THE ACTION OF WHICH IS ESPECIALLY SPENT UPON THE NERVOUS SYSTEM.

As the *modus operandi* of the stimulant substances which act principally upon the nervous system is very various, it would be difficult to speak of them in a general way. In fact, both

alcohol and nux vomica belong to this class; but their effects, as is well known, have no resemblance whatever. There is, however, a certain number of these remedies which have a great analogy with respect to their mode of action, and which seem to form a tolerably natural group. These are remedies, the influence of which on the nervous system seems to have the power of abating the morbid state of the functions of this system, manifested by irregular and convulsive motions, called spasms, or spasmodic motions. We shall therefore place them together at the end of this chapter, under the head *Antispasmodics*, and thus] placed they will form an easy introduction to the study of narcotics, to which class they are very nearly related.

MINERAL KINGDOM.

Phosphorus. *Phosphorus.* A simple body, existing abundantly in nature, in the state of phosphoric acid combined with lime, in certain minerals found in Spain, and in the bones of animals generally. It is also a constituent part of several animal substances, such as the brain and nervous pulp, the roes of fishes, &c.

P. P. It is solid, generally in the form of sticks of the size of a quill, semi-transparent, flexible, easily cut, of a yellowish-white, tasteless, of a peculiar garlic smell, and of a specific gravity of 1.77. It is luminous in the dark, when exposed to the air.

C. P. Although phosphorus has a great affinity for oxygen, still it is without action upon this gas at the common temperature and atmospheric pressure; but, if the temperature is risen, it absorbs it rapidly, and burns with a vivid light, producing very thick white fumes, which consist of phosphoric acid. By diminishing the atmospheric pressure, it combines with oxygen, but this action operates slowly. Exposed in the air, it acts in the same way, produces white fumes of a garlic smell, and absorbs oxygen by degrees, but combustion becomes instantaneous if the temperature be higher. Heated, it melts at 43° Centig. (110° Fahr.), at a higher temperature it volatilizes. Light reddens it, even when placed in a vacuum. It is insoluble in water, but dissolves in alcohol, ether, and oils. It combines with a great number of bodies, and forms phosphurets.

Incomp. Subst. Water precipitates it from its alcoholic and ethereal solutions.

Prep. It is obtained by decomposing super-phosphate of lime by charcoal. It is purified by melting it in boiling water,

mintic. It is now very seldom administered, and its exhibition requires the greatest prudence, on account of its deleterious properties.

D. & M. OF ADM. Gr.¼ to ⅓ in a gummous menstruum.——*Solution of muriate of baryta*, P. (Chloride of barium, 1; distilled water, 5.)——*Solutio muriatis barytæ*, E. (Chloride of barium, 1; distilled water, 3.) Dose, from gutt.ij. to gutt.x.——*Liquor terræ ponderosæ salitæ*, DEN. (Chloride of barium, 1; distilled water, 48; ℈j. contains gr.⅙ of muriate.) Dose, from gutt.vj. to ℈j., in a mucilaginous mixture.

Externally, as a stimulant and a weak escharotic, in lotions, on scrofulous ulcers; but it must be used with caution, as it is easily absorbed.

HYDRO CHLORATE OF LIME. *Calcis hydro-chloras.* It exists in materials containing saltpetre, and in the waters of several springs.

P. P. It crystallizes in six-sided prisms, striated, and terminated in pyramids; very deliquescent; of an acrid, bitter, and very sharp taste.

C. P. It is composed of lime 51.90, and hydro-chloric acid 48.10. It is very soluble in water. Heated, it melts, liberates a small quantity of acid, and changes into a chloride of calcium, under the form of a coarse grey powder, attracting powerfully the moisture of the atmosphere, and which is composed of 42.61 of chlorine, and 37.59 of calcium.

INCOMP. SUBST. The sulphuric, nitric, phosphoric, and boracic acids, and their salts; the alkalies, and their carbonates, &c.

PREP. By treating carbonate of lime by liquid hydro-chloric acid.

TH. E. This salt exercises a stimulant influence on the whole economy, but it acts more particularly upon the lymphatic glands. Its mode of action is analagous to that of muriate of baryta; but it is not so poisonous as the latter, and it is, consequently, to be preferred to it. It is used to discuss scrofulous affections, lymphatic engorgements of the glands, in cases of general debility, &c. In large doses it is purgative. It is now very seldom used.

D. & M. OF ADM. Gr.vj. to ʒj., dissolved in water.——*Liquor calcis muriatis*, L. (Muriate of lime, 2; distilled water, 3.) Dose, from gutt.xxx. to ʒj., in two ounces or more of water, two or three times a day.

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MINERAL KINGDOM.

Phosphorus. *Phosphorus.* A simple body, existing abundantly in nature, in the state of phosphoric acid combined with lime, in certain minerals found in Spain, and in the bones of animals generally. It is also a constituent part of several animal substances, such as the brain and nervous pulp, the roes of fishes, &c.

P. P. It is solid, generally in the form of sticks of the size of a quill, semi-transparent, flexible, easily cut, of a yellowish-white, tasteless, of a peculiar garlic smell, and of a specific gravity of 1.77. It is luminous in the dark, when exposed to the air.

C. P. Although phosphorus has a great affinity for oxygen, still it is without action upon this gas at the common temperature and atmospheric pressure; but, if the temperature is risen, it absorbs it rapidly, and burns with a vivid light, producing very thick white fumes, which consist of phosphoric acid. By diminishing the atmospheric pressure, it combines with oxygen, but this action operates slowly. Exposed in the air, it acts in the same way, produces white fumes of a garlic smell, and absorbs oxygen by degrees, but combustion becomes instantaneous if the temperature be higher. Heated, it melts at 43° Centig. (110° Fahr.), at a higher temperature it volatilizes. Light reddens it, even when placed in a vacuum. It is insoluble in water, but dissolves in alcohol, ether, and oils. It combines with a great number of bodies, and forms phosphurets.

Incomp. Subst. Water precipitates it from its alcoholic and ethereal solutions.

Prep. It is obtained by decomposing super-phosphate of lime by charcoal. It is purified by melting it in boiling water,

and straining it through a chamois skin, it is then poured into glass moulds.

Th. E. Administered incautiously, phosphorus is a very violent poison; it acts by burning and disorganizing the parts with which it comes in contact. In spite of the dangers which may result from its ingestion, some physicians have ventured so far as to administer it internally, and numerous and well-authenticated observations have proved that it may be exhibited with impunity. It would appear from these facts that it is a very powerful excitant, the very prompt, but not lasting action, which appears principally exerted on the nervous system, and especially on the organs of generation. It has been exhibited with success in cases of adynamic fevers attended with excessive prostration of strength, in paralysis, in obstinate gouty and rheumatic affections, &c. We may remark, with Dr. Sédillot, who has largely experimented upon this remedy, that it can scarcely be given in the form of pills, or incorporated with an electuary, on the account of the facility with which it burns during the preparation, and that it is preferable to administer it in solution, especially in oil. However, it is a very dangerous remedy, the administration of which requires the greatest prudence.

D. & M. of Adm. Gr.¼ to j. suspended in an emulsion.——*Phosphorated ether*, P. (Phosphorus, 1; sulphuric ether, 50; every ounce contains a little more than 11 grains of phosphorus.) Dose, gutt.v. to gutt.x. and above, in a mixture.—*Ether phosporatus*, Den. (Phosphorus, 1; sulph. ether, 60; every ounce contains eight grains of phosphorus. (Dose, from gutt.x. to gutt.xv. and gradually to gutt.lxxx.——*Phosphorated oil*, F. M. (Phosphorus, 1; olive or sweet almond oil, 16; essential oil of bergamot, q. s.; every drachm contains gr.iv½. of phosphorus.) Dose, from gutt.xx. to gutt.xxx. a day in a looch or any mucilaginous menstruum.

Externally. *Phosphorated salve*, P. (Phosphorus, 4; axungia and water, āā 50; essential oil of lavender, q. s.) In frctions, but with caution.

VEGETABLE KINGDOM.

Family Apocineæ.

Nux Vomica. *Nux vomica*. *Strychnos nux vomica*, Lin. A tree growing in the East Indies, especially at Ceylon and Malabar.

P. U. The seeds.

B. C. Trunk of a moderate size, branches opposite; leaves entire, oval, smooth, with short petioles; flowers small, white, in small corymbs at the extremity of the branches; corolla tubular, five-divided; stamina free and distinct; ovary simple, unilocular; fruit ovoid, of the size of an orange, and containing several seeds scattered in an aqueous pulp.

P. P. These seeds are round, flat, pitted on one side, from six to eight lines wide, hard, horn-like, commonly white and semi-transparent internally; sometimes, however, black and opaque; covered over with short and very close hair, which gives them a velvet appearance, of a light brown colour, of a taste extremely bitter and disagreeable.

C. P. According to Pelletier and Caventou, nux vomica contains *strychnia* and *brucia*, combined with a peculiar acid, to which these chemists have given the name of *igasuric*; a yellow colouring matter, a concrete oil, gum, starch, a little wax, some bassorin, and woody fibres. It contains strychnia in the proportion of about $\frac{1}{150}$. Its active principles are very little soluble in water, but they dissolve very easily in alcohol.

Th. E. This substance acts with great energy on the living body. In the dose of a few grains, it induces very violent spasmodic contractions, amounting to a real attack of tetanus, but alternating at intervals by flaccidity of the limbs of a shorter or longer duration, and which may be reproduced at pleasure by slightly touching the animal. Should the quantity be more considerable, it produces death, either by asphyxia, by preventing the respiratory muscles from performing their functions, or, as Dr. Segalas thinks, by acting in a peculiar manner on the nervous system. Nux vomica seems to act more especially on the spinal marrow, for the division of this organ below the occipital bone, or even decapitation, does not prevent the above-mentioned effects from taking place, and continuing for some time after. The discovery of the peculiar and energetic action of this remedy on the spinal marrow, has been turned to some advantage in the cure of paralysis, when there is no lesion of the brain; it has also been used in cases of permanent contraction or atrophy of the limbs, in certain cases of amaurosis, &c. It is worthy of remark that the spasmodic contractions produced by this substance are felt principally in the paralyzed parts.

From what we have just mentioned, it is evident that this remedy is very dangerous, and that its employment requires great care and attention on the part of the physician.

D. & M. of Adm. Powder, seldom, gr.iv. to xij.——*Alcoholic extract*, P. (Gr.½ to iv. a day, in pills, and gradually to xij. and xv.)——*Tincture*, P. (Nux vomica, 1; alcohol, 4.)——*Tincture*, F. M. (Alcoholic extract of nux vomica, 3; alcohol, 576. Every ounce contains 3 grs. of extract of nux vomica.) Dose, from gutt.xx. to xxx. in a mixture, or in frictions upon the paralyzed parts.

Saint Ignatius' Bean. *Faba indica* seu *Semen ignatiæ. Strychnos ignatia*, Rich. A tree very nearly related to the preceding, and growing in the Philippine islands.

P. U. The seeds.

B. C. Trunk tolerably elevated; leaves nearly sessile, oval; flowers white, of an agreeable odour, in small clusters in the axilla of the leaves; fruit ovoid, of the shape of a pear, containing from fifteen to twenty grains.

P. P. They are of the size of an olive, round and convex on one side, angular on the other, of a pale brown colour externally, of a greenish-brown internally. Their substance is hard, compact, and horn-like; they are inodorous, and of an excessively bitter taste.

C. P. The constituent principles of this article are the same as those of the nux vomica, but in different proportions. It contains $\frac{1}{1000}$ of strychnia, but rather less brucia.

Th. E. The same as that of the preceding substance, but it is rather more energetic. It is somewhat scarce in commerce, and is very little used.

D. & M. of Adm. Powder, gr.ij. to iv.

The Snake Wood, furnished by the *Strychnos colubrina*. Lin., and the Upas Tieute, one of the most violent poisons of the vegetable kingdom, which is likewise produced by a *Strychnos*, growing in Java, are not employed in medicine. Their deleterious properties are owing to the strychnia which they contain.

Strychnia. *Strychnia.* A vegetable alkaline substance, discovered by Pelletier and Caventou in the Saint Ignatius' bean and nux vomica.

P. P. It is a white powder, composed of almost microscopic crystals, prismatic, transparent, inodorous, of an excessively bitter taste, and unalterable in the air.

C. P, According to Pelletier and Dumas, strychnia is composed of carbon, 78.22; nitrogen, 8.92; hydrogen, 6.54; and oxygen, 6.38. It is almost insoluble in cold water and ether; it dissolves in 2500 of boiling water, and is very soluble in alcohol and volatile oils; heated below 300° Centig, (572° Fahr.) it does not experience any alteration; at a higher temperature it is decomposed. It possesses alkaline properties, combines with diluted acids, and forms neutral salts. It acquires with nitric acid a deep red colour when it contains brucia, which is very often the case, on account of the difficulty of separating them.

Prep. Treat the nux vomica with boiling water, and evaporate to the consistence of syrup; then add lime, which combines with the igasuric acid, and liberates pure strychnia. It is separated by means of alcohol, and purified by successive crystallizations.

Th. E. The employment of this alkali is similar to that of the substances from which it is extracted; it is much more energetic. It may be used in the same cases.

D. & M. of Adm. Gr. one-twelfth to one-eighth, in pills.——*Strychnia pills*, F. M. (Strychnia, gr.j.; conserve of cynorrhodon, gr.viij.; for twelve pills.) No. j. to ij. a day.——*Strychnia mixture*, F. M. (Strychnia, gr.j.; acetic acid, gutt.ij.; distilled water, ℥ij.;) cochl. min. j. morning and night. *Tincture*, F. M. (Strychnia, gr.iij.; alcohol, ℥j.;) gutt.vi. to xxiv. in a mixture.

Sulphate of Strychnia. *Strychniæ sulphas.* It crystallizes in small transparent cubes, when it is neutral, and in the shape of needles when a bi-salt. It is unalterable in the air, soluble in ten parts of cold water, and of a very bitter taste. Heated, it becomes opaque, melts and forms a mass. At a high temperature it is decomposed. It is composed of strychnia, 90.5; and sulphuric acid, 9.5. It acts more powerfully on the system than strychnia itself, on account of its solubility. Dr. Magendie has administered it under several circumstances, and obtained the same results as with strychnia, but he used it rather in smaller doses, for instance, from $\frac{1}{20}$th to $\frac{1}{12}$th of a grain.

The other salts of strychnia are likewise very soluble, and of course they are also very deleterious. They have not yet been tried as medicines.

False Angustura Bark. *Cortex pseudo-angusturæ.* This substance, obtained from South America, is probably yielded by a *strychnos* as yet undescribed, and not by the *Brucea antidysenterica*, by which it was supposed, for a long time, to be produced, and which grows in Abyssinia.

P. P. This bark is in pieces more or less long, rolled, compact, heavy, two or three lines thick, of a reddish-grey colour internally, covered over with an epidermis of a variable, sometimes fungous and rusty appearance. Its odour is weak, somewhat similar to that of ipecacuanha. Its taste is very bitter, lasting, but without any acrimony.

C. P. It contains, according to Pelletier and Caventou, brucia combined with gallic acid, a fatty matter, gum, a yellow colouring matter, lignous fibres, &c. Water and alcohol take up the active principles.

Th. E. This substance acts in the same manner as nux vomica, and like the other strychnos; but it is less energetic. It is only employed for the preparation of brucia.

Brucia. *Brucia.* Vegetable alkali, discovered by Pelletier and Caventou, in the false angustura bark, nux vomica, and several other *strychnos.*

P. P. This substance is solid, of a pearly white, sometimes crystallized in regular prisms, sometimes in small scales like boracic acid, inodorous, of a very bitter taste.

C. P. It is composed, according to Pelletier and Dumas, of carbon, 75.04; nitrogen, 7.22; hydrogen, 6.52; and oxygen, 11.21. It dissolves in 852 of cold, and in about 500 of boiling water. It is very soluble in alcohol. It melts at a temperature below 100° Centig. (212° Fahr.), and hardens like wax on cooling. Finally, it turns the syrup of violets green, and forms salts with diluted acids. Concentrated nitric acid produces with it a fine red colour.

PREP. Brucia is obtained by a process similar to that employed to procure strychnia. In order to purify it, it is requisite to combine it with oxalic acid, and treat the salt thus obtained with alcohol and ether. The oxalate of brucia is then decomposed by magnesia.

TH. E. According to the investigation of Drs. Magendie and Andral, jun. this substance seems to act upon the animal economy in the same manner as strychnia, but with less energy, since six grains of brucia are equivalent to about half a grain of strychnia. But M. Chevallier, from unpublished experiments communicated to him, thinks that the therapeutical properties of this substance are very different from those of nux vomica. However, Drs. Andral and Magendie have exhibited it with advantage in certain cases of palsy, in atrophy of the extremities, and in several other similar cases.

D. & M. OF ADM. Gr ½ to vj. gradually. *Brucia pills*, F. M. (Brucia, gr.xij.; conserve of roses, gr.xxxvj.; for 24 pills.) No. ij. to vj. and above, a day. *Brucia mixture*, F. M. (Brucia, gr.vj.; sugar, ʒij.; mint water, ℥ij.;) cochl. ij. to iv. a day. *Tincture* F. M. (Brucia, 1; alcohol, 32.) Dose, from gutt.vj. to xxiv. in a suitable menstruum.

The salts of brucia are very soluble in water, and consequently more active than the base itself. They have not yet been administered medicinally. Dr. Magendie is of opinion that the sulphate and muriate might be employed.

The SULPHATE of BRUCIA crystallizes in long prismatic needles; is very soluble in water, and of a very bitter taste. It is composed of sulphuric acid 8.84, and brucia, 91.16.

The HYDRÓ-CHLORATE of BRUCIA crystallizes in four-sided prisms, unalterable in the air. It is composed of hydro-chloric acid 5.95, and brucia 94.04.

Family Synanthereæ.

ARNICA. *Arnicæ flores et radix. Arnica montana*, Lin. A perennial plant growing in the Vosges, Alps, Pyrenees, &c., and flowering in the month of July.

P. U. The flowers and root.

B. C. Stem simple, pubescent, one foot high; leaves sessile, oval, entire; of a light green colour underneath; aggregated at the base of the stem; flowers large, of a lively yellow colour; involucrum spreading; florets of the disk regular and hermaphrodite; semi-florets of the circumference large and female; fruits elongate, surmounted by a plumose pappus.

P. P. The desiccated flowers, such as they are received from Germany, present at their circumference, semi-florets of a golden yellow, and in their centre some black seeds surmounted by a grey pappus. Their taste is bitter, acrid, and nauseous, and their strong and aromatic smell provokes sneezing. The root, scarcely ever used, is slender, fibrous, blackish externally, white internally, of an odour and taste similar to those of the flowers.

C. P. According to Lassaigne and Chevallier, the arnica flowers contain an odorous resin, a nauseous bitter matter, similar to *cytisine*, some gallic acid, a yellow colouring matter, albumen, gum, and salts, with base of potassa and lime. Water and alcohol dissolve their active properties.

INCOMP. SUBST. Sulphates of iron and zinc, acetate of lead, and mineral acids.

TH. E. The first effect resulting from the ingestion of this remedy is an irritation of the digestive canal, characterized by a sensation of heaviness at the epigastric region, nausea, and sometimes vomiting, colics, and even alvine evacuations; but if the patient continues to employ this plant in moderate doses, these phenomena are only transient, and they disappear in a short time; indeed, the organs seem to be easily habituated to its action. The secondary effect is felt by the brain and by the whole nervous system. It manifests itself by cephalalgia more or less violent, spasmodic motions, pricking in the limbs, and a sort of permanent contraction of the respiratory muscles. It is evident that this remedy is a very energetic stimulant, and may be exhibited with advantage in a great number of cases.

It is used commonly in chronic rheumatism, palsies, amaurosis, and, in a word, as a stimulant of the brain. It has been recommended as a febrifuge; but, although it sometimes succeeds, it cannot, in any way, be a substitute for bark. Finally, it has been advised in fevers of an adynamic or ataxic nature.

This substance is very much used by German practitioners. It is commonly considered as a sure remedy for accidents resulting from blows on the head; but from what we have already said of its mode of action, we may easily perceive that, in most cases, it must be more hurtful than advantageous. The powder of the flowers acts as a violent sternutatory.

D. & M. OF ADM. Pulverized flowers, gr.vi. to x. and even ʒss. gradually. Decoction and infusion, from ʒiv. to ℥j. to ℔ij. of water.——*Extractum arnicæ* POL., PH., A. gr.x. to ℈j.——*Tinctura arnicæ*, POL. (Arnica, 1; alcohol, 24.) ʒss. to ʒj., in a proper menstruum. Root, powder, gr.xij. to ʒj. Decoction, same doses as the flowers.

Family Viniferæ.

WINE. Vinum. An alcoholic liquor resulting from the fermentation of the juice of the grape; a fruit produced by the *Vitis vinifera*, Lin. A sarmentose shrub, native of Asia, and generally cultivated in almost every country.

B. C. Stem and leaves known by every body; flowers small, greenish, in clusters opposite to the leaves; calix five-toothed, very small; corolla, five green petals; five stamina; fruit, berries of various colours, containing from one to four seeds.

P. P. Wine differs very much, according to the nature of the grape from which it is extracted, and the manner in which it has been made. Thus, wines are red when the black grape with its skin has been used, and of more or less yellowish-white colour when the white grape, or even when the black grape, freed of its skin, has been employed. Their odour and savour vary also very much, and are in no relation to the quantity of alcohol they contain. Burgundy wine, for instance, contains scarcely any more alcohol than that of Surenne, but it is, however, of a very different quality. The wines of southern regions are, generally, the most highly flavoured. Those of cold climates, on the contrary, are harsh, and even frequently very acid.

Wines, with respect to their properties, may be divided into three principal divisions; that is, 1st, The *astringent*, or *dry wines*, such are those of Alicant, Bordeaux, Burgundy, Sherry, Madeira, &c. These wines contain a small quantity of tannin, which gives them a taste more or less harsh. 2d. The *sweet wines*, such are Malaga, Rota, Rivesaltes, Lunel, &c., containing a tolerably large quantity of sugar, which has escaped fermentation; and, 3d. The *foaming*, or *sparkling wines*, such as Champagne, which, being bottled up before they have undergone a perfect fermentation, contain a large quantity of carbonic acid gas in solution.

C. P. All the wines give, on analysis, very nearly the same products, viz. water, alcohol, a little mucilage, colouring principles, supertartrate of potassa, tartrate of lime, acetic acid, and some of them contain besides, carbonic acid; finally, a very volatile principle which has not yet been isolated, and to which the peculiar flavour or *bouquet* of the wine has been attributed. It is to the presence of alcohol they are principally indebted for their stimulant and diffusible properties, and this principle, which may be separated by distillation, exists in them in very different proportions, as may be perceived by the following table, for which we are indebted to Mr. Brande:—

Names of the Wines, Malt, and Spirituous Liquors, and the Proportion of Alcohol, (specific gravity 0.825*), in one hundred parts of these Liquids by measure.*

Lissa (average)	25.41	Nice	14.63
Raisin (average)	25.12	Champagne (still)	13.80
Marsala (average)	25.09	Ditto (sparkling)	12.61
Port (average)	23.39	Red Hermitage	12.32
Madeira, and red or Burgundy		Vin de Grave	13.37
Madeira (average)	22.27	Frontignac	12.89
Currant wine (average)	20.55	Cote rotie	12.32
Xeres or Sherry (average)	19.17	Rhenish wine (average)	12.08
Teneriffe	19.79	Tokay	9.88
Lachryma-christi	19.70	Gooseberry wine	11.84
Constantia (white)	19.75	Cider (highest average)	9.87
Ditto (red)	18.92	Ditto (lowest ditto)	5.21
Lisbon	18.94	Mead	7.32
Cape Muscat	18.25	Ale (average)	6.87
Rousillon (average)	18.13	Brown stout	6.80
Malaga	17.26	Porter (average)	4.20
Hermitage (white)	17.43	Small beer	1.28
Malmsey Madeira	16.40	Brandy	53.39
Lunel	15.52	Rum	53.68
Bordeaux wine or claret (average)	15.10	Gin	51.60
Sauterne	14.22	Whiskey	54.32
Burgundy (average)	14.57	Irish ditto	53.90

TH. E. The action of wines upon the animal economy depends principally upon the quantity of alcohol which they contain. However, a given quantity of wine does not act in the same way as a mixture of alcohol and water, in the same proportions; and certain wines, yielding, on distillation, very nearly the same proportion of alcohol, do not inebriate with the same facility. This difference must be ascribed to the various kinds of combinations in which alcohol exists in these complex products. However, all these phenomena are too generally known to require in this work any further description. We shall simply state that astringent wines act as tonics and stimulants, and that the sparkling wines, which act so promptly and so powerfully on the brain, notwithstanding the small proportion of alcohol they contain, exercise likewise a very decided diuretic influence.

The diseases in which wine may be employed as a remedy are very numerous. It is administered with success in certain cases of adynamic and ataxic fevers, in scorbutic and scrofulous affections; and in all asthenic diseases; whilst its use is contra-indicated in all acute phlegmasia. It is besides a menstruum for a great many remedies, and enters into the composition of a great number of officinal preparations.

ALCOHOL. *Alcohol* is one of the products of vinous fermentation. It exists, already formed, in variable quantities, in liquids which have undergone this process.

P. P. Pure alcohol is liquid, transparent, colourless, very volatile, of a warm taste, of a penetrating and agreeable smell *sui generis,* and of a specific gravity of 0.796.

C. P. The elements of alcohol may be represented by an equal volume of bi-carburetted hydrogen or olefiant gas, and steam of water. Exposed to the air this liquid evaporates quickly, and it even attracts the moisture of the atmosphere. The mixture of these two liquids is accompanied by an increase of temperature, and induces changes in the density of alcohol. Thus the specific gravity of 92 of alcohol and 8 of water, is 0.815; that of 99 of water, and 1 of alcohol, is of 0.999, &c. In order to determine the proportion of alcohol, they generally use in France, Baumé's areometer, the 10° of which corresponds with distilled water, and the 40° with alcohol containing 8 only of water in 100 parts. The alcohol of the shops is from 32° to 35°; and brandy, which contains generally about equal parts of alcohol and water, marks from 18° to 22°.

Alcohol boils at 78° Centig. (172° Fahr.), and volatilizes rapidly without being decomposed. The density of this vapour is 1613; it inflames easily by the contact of an ignited body, and burns with a spreading and bluish-white flame, without leaving any residue. The most intense artifical cold has never been able to solidify it; for Hutton's experiments, in which he pretends having congealed it by a cold of 79° Centig. are extremely doubtful. Most of the mineral acids transform it into ether. It dissolves phosphorus, sulphur, iodine, mineral and vegetable alkalies, and deliquescent salts. All the other metallic oxides, the salts insoluble in water, and the efflorescent salts, on the contrary, do not dissolve in it. Resins, oils, balsams, soaps, &c., are in general easily taken up by this liquid.

PREP. Alcohol is obtained on a large scale by distilling, in an alembic, the different fermented liquors which contain it. The product of the first distillation is an alcohol diluted with a large quantity of water. Its odour and taste vary according to the liquors from which it has been obtained, and it receives accordingly different names, such as *brandy*, when distilled from wine; *Taffia*, *Rum*, when it is furnished by the juice of the sugar-cane; *Arrack*, when distilled from rice, &c. In order to purify and separate it from water, in a word, to rectify it, it is re-distilled several times, by mixing with it substances possessing a greater affinity for water, such as sub-carbonate of potassa, chloride of sodium, &c., and by separating the products.

TH. E. Alcohol is one of the most energetic diffusible stimulants. Concentrated, it acts as a violent poison; diluted, and taken in small quantities, it produces a more or less lively heat about the epigastric region, an irritation of the nervous system, acceleration of the circulation; in a word, a general excitation. In larger quantities it produces inebriation, characterized by profound coma, inflammation of the stomach, &c. It is even capable of producing death. Alcohol of 36°, or *rectified spirit of wine*, is used to prepare elixirs and tinctures, and it seems to increase the action of a great number of medicinal substances. It is never employed alone in practice; but in the state of brandy, &c. it is daily used as a table drink; as a tonic and a stimulant, in diseases attended with adynamic symptoms, and in typhus; in the convalescence of serious diseases, delirium, tremors, &c. Externally it is used as a rubefacient, and, diluted with water, as a tonic, astringent and refrigerant, under various circumstances.

D. & M. OF ADM. ʒj. to ℥ij., diluted as a drink.——*Mild punch*, PARIS H. (Brandy and gum water, āā. ℥ij.; alcohol of balm, ʒij.; simple syrup, ℥j.) cochl. j. or ij. every two or three hours.

Antispasmodics.

Antispasmodics (*αντι*, against, and *σπασμος*, spasm,) are stimulant remedies which exercise on the nervous system a peculiar influence, having a tendency to soothe disorders of its functions, and calm irregular muscular contractions, called spasmodic motions. In general, their effects are promptly manifested, and are so much the more marked as the patient is in a greater state of weakness and irritability; but these effects are of short duration, and the action is soon blunted by habit. Antispasmodics appear to excite powerfully the nervous system, at the same time that they regulate, as it were, its action; they soothe pain, and calm agitation, without producing that state of drowsiness which characterizes narcotic medication; they diminish the convulsive motions of the muscles, when not produced by inflammation of the cerebral system. Thus we see, that under this point of view, antispasmodics differ essentially from the other stimulant remedies. Ether, for instance, acts with the same promptitude as alcohol, and for this reason it has received, as well as the latter, the denomination of diffusible stimulant; but instead of occasioning convulsive motions, as alcohol does, it has rather a tendency to calm them, and may even be used with advantage in convulsive tremor attendant on inebriation.

Most of the remedies of this kind are remarkable for their smell and for the great volatility of their active principles; but their nature varies considerably. They are commonly exhibited in cases of intermittent and chronic convulsions, and other nervous symptoms, as we shall mention in the particular history of each of these articles; but, like all the excitants, their employment is injurious whenever inflammation exists in any of the important organs.

The ETHERS are compounds, resulting invariably from the action of acids upon alcohol. M. Thenard divides them into three distinct classes, viz.:—

1. Those composed of hydrogen, oxygen, and carbon, and in the formation of which there does not exist the least quantity of the acid employed, which acid acts only by depriving the alcohol of a part of its hydrogen.

2. Those containing bi-carburetted hydrogen combined with the acid employed. And,

3. Those resulting from the intimate combination of the acid with the alcohol.

SULPHURIC OR HYDRATIC ETHER. *Æther sulphuricus seu vitriolicus.* It results from the action of a concentrated acid; having a great affinity for water, and not easily volatilized on alcohol; such as sulphuric, phosphoric, arsenic, or fluo-boracic acid.

P. P. Sulphuric ether is liquid, colourless, limpid, extremely volatile, of a strong, peculiar, and agreeable smell, of a warm and sharp taste, and of a specific gravity of 711.

C. P. According to M. Gay-Lussac, its elements may be represented by two of bi-carburetted hydrogen, and one of vapour of water, by volume; from hence it results that, in order to transform alcohol into ether, it is necessary to deprive it of one-half of its hydrogen and oxygen in the proportions requisite to form water. It volatilizes at the common temperature, by producing an intense degree of cold; the density of its vapour is 2.586. Under the pressure of 0.76 centimetres (29¾ inches) it boils at 35° Centig. (95° Fahr.) It burns easily with a wide spreading white flame, and is decomposed at a red heat. It dissolves in ten parts of water, and unites in every proportion with alcohol and ammonia, from which it is separated by water; it dissolves a great number of vegetable matters, and some animal substances.

P. P. Mix, by degrees, equal parts of alcohol and concentrated sulphuric acid in a retort, and warm the mixture; the ether volatilizes, and condenses in a receiver, kept cold by means of ice. It is rectified by agitation with caustic potassa, which takes up the alcohol, and by distilling it with a gentle heat, after having mixed with it chloride of calcium.

TH. E. Sulphuric ether, taken internally in large doses, irritates the stomach powerfully, and produces, at the same time, giddiness, flashes of light, a sort of intoxication, not so lasting, however, as that resulting from alcohol. In small doses, this substance causes a sensation of heat, which, from the stomach, extends rapidly to the whole body. Its action is then spent on the nervous system, the vitality of which it modifies powerfully, sometimes by acting upon it as a sedative, at other times by stimulating it with great energy; but always in a transient manner. In no case does it seem to have any influence upon the circulatory system. It is exhibited with advantage in most of the nervous affections, such as spasmodic vomiting, nervous colics, hysteria, asthma, and generally all the neuroses. Ether is often employed in cases of intoxication, which it relieves as by enchantment. It is exhibited with decided advantage in typhoid fevers, in order to calm the convulsive motions, hiccough, &c. It has also been recommended as a febrifuge and an anthelmintic. Administered in enema, it often proves useful in nephritic colic. The vapour which disengages incessantly from it is employed to irritate the pituitary surface in cases of syncope, and may be useful in certain nervous affections of the organs of respiration. Externally, ether is used as a refrigerant, to oppose certain neuralgiæ, headaches, &c. Finally, this liquid is employed as a solvent of a great number of remedies.

D. & M. OF ADM. Gutt.vi. to x. on sugar, or from gutt.xx. to xxx. in a mixture.——*Antispasmodic mixture*, P. (Sulphuric ether, ʒj.; linden tree flower and orange flower waters, āā. ℥ij.; syrup, ℥j.) Dose, a table-spoonful.——*Spiritus ætheris sulphurici*, L., E., U. S., F. (Sulphuric ether, 1 part; alcohol, 2 parts. ——*Spiritus ætheris sulphurici compositus*, or *Hoffmann's anodyne liquor*, L., U. S., P. (Spirit of sulphuric ether, 1 pint; ethereal oil, f.ʒij.)——*Spiritus sulphurico-æthereus*, PR., POL. (Ether, 1; alcohol, 3 parts.)—DEN. (Ether, 1; alcohol, 6.) Dose, from gutt.xv. to xxx. in a mixture.——*Syrupus ætheris sulphurici*, P. (Ether, 3; distilled water, 32; sugar, 64.) Dose, from ℥ss. to ℥j.

HYDRO-CHLORIC ETHER. *Æther hydro-chloricus* seu *muria-*

decomposition. It is decomposed by potassa; it is not altered by age.

Prep. It is prepared by heating, in a retort, a mixture of 100 of alcohol, 63 of concentrated acetic acid, and 17 of sulphuric acid at 66°.

Th. E. It possesses the same properties as the other ethers, but it is much less volatile. For this reason it is often preferred for external applications. Dr. Sédillot has used it, with great advantage, in frictions upon parts affected with rheumatic and neuralgic pains.

D. & M. of Adm. The same as with sulphuric ether. Externally, in frictions ʒij. to ʒiv., according to Dr. Sédillot's method.

Family Guttiferæ.

Camphor. *Camphora.* A proximate principle, contained in a great number of plants; but obtained principally from the *Dryobalanops camphora,* Colebroke, a large tree, native of the forests on the north-western coast of Sumatra; and from the *Laurus camphora,* Lin., a tree growing in China and Japan.

B. C. *Dryobalanops.* Trunk large, often six or seven feet in diameter; leaves opposite below, and alternate above, elliptical, obtusely acuminate, or rather beaked, parallel-veined, entire, supported on short petioles, with subulate, caducous stipules in pairs; calix, one-leafed, permanent, enlarged into a gibbous cap. with five ligulate, long, scariose wings; corolla, five-parted; fruit, a persistent capsule, superior, ovate, woody, fibrous, longitudinally furrowed, one-celled, and three-valved, with a solitary seed, possessing a strong terebinthinate fragrance.

Laurus camphora. *Family Laurineæ.* Trunk straight, tolerably high; leaves alternate, oval, shining on the superior surface, glaucous on the inferior one, flowers in corymbs, supported on long peduncles; fruit, similar to that of the cinnamon tree, but smaller.

P. P. Camphor is solid, white, transparent, very volatile, brittle; commonly in the form of round pieces, convex on one side, slightly concave on the other, of a crystalline texture, and shining fracture, not easily pulverized, tenacious between the teeth, of a strong smell, *sui generis,* of an acrid taste, followed by a sensation of cold. Its specific gravity is 0.988.

C. P. It is composed of carbon, 74.38; hydrogen, 10.67; and oxygen, 14.61; it inflames easily, and burns with a good deal of smoke without leaving any residue. Heated, it melts at 175° Centig. (347° Fahr.), boils at 204° Centig. (400° Fahr.); and is easily reduced to vapour, even at the common temperature. Alcohol dissolves three-fourths of its weight; it is very soluble in ether, in fixed and volatile oils; but water dissolves only a small quantity, and precipitates it from its alcoholic solutions. Treated, *viâ callidâ*, with nitric acid, it gives camphoric acid, and with sulphuric acid, it changes, partly, into artificial tannin.

Prep. Dr. Thomson remarks, that the greatest part of the camphor brought to Europe, that is, the Sumatra camphor, is the product of the *Dryobalanops*. It forms in the heart of the tree, occupying spaces of a foot, or a foot and a half long, at certain distances; but the younger trees yield oil only, which has nearly the same properties as the camphor, and would ultimately be converted into the concrete substance. The natives, in searching for camphor, make a deep incision in the trunk with an axe, about fourteen or eighteen feet from the ground; and when any is discovered they fell the tree, and cut it into junks of a fathom long, which are again split. The camphor is found in perpendicular layers, and in a concrete state, resembling whitish flakes, occupying a space the thickness of a man's arm. A tree of a moderate size will yield nearly eleven pounds, and a large tree double this quantity. The camphor furnished by the Laurus camphora is obtained by heating in close vessels, with a certain quantity of water, the wood and root of the tree. The vapour of the water carries off the camphor, which condenses in the superior part of the apparatus, in the form of a grey powder. It is purified by subliming it in glass or iron vessels, after being mixed with one-twentieth of its weight of quicklime.

Th. E. The local action of camphor is weak, and of an irritating nature. Its general action is difficult to explain, and it varies considerably according to the doses and individuals to whom it is administered; it is upon the nervous system that it exercises its principal influence. Administered in small doses, it does not increase the rapidity of the pulse, unless it be the consequence of its local action upon an inflamed surface; it soothes pain, induces sleep, diminishes spasmodic motions; in a word, it seems to act as a sedative. In large doses it becomes a very energetic stimulant, and causes dizziness, syncope, and convulsions, attended with paleness of the face, and chills; it diminishes the frequency of the pulse; indeed, it may even sometimes produce death. This remedy is employed frequently with success in nervous and spasmodic affections, such as neuralgic pains, spasm of the bladder, and of the œsophagus, in hysteria, chorea, &c. It has often been administered in typhoid fevers to abate the nervous symptoms, such as delirium, subsultus tendinum, &c. It has been recommended as an anti-aphrodisiac.

Externally it is employed with great advantage in rheumatic affections, gout, neuralgia, &c. It is one of the remedies most commonly used.

D. & M. OF ADM. *Internally.* Gr.ij. to ℈j. and even ʒss. to ʒj. a day, in pills, or suspended in a mixture by means of a mucilage or the yolk of an egg.——*Pilulæ opii camphoratæ*, NEW YORK H. (Opium, ʒij.; pulverized camphor, ʒss.; mucilage of gum Arabic, q. s.) For pills, No. cxx.——*Camphorated bolus*, PARIS H. (Camphor and nitrate of potassa, āā. gr.xij.; starch and simple syrup, q. s. for a bolus.) Dose, from No. 4 to 10 a day.——*Bolus camphoræ*, GUY'S H. (Camphor and conserve of roses, āā. gr.vj.) Dose, one every four or six hours.——*Sedative pills*, PARIS H. (Camphor, gr.ij.; calomel, gr.j.; simple syrup, q. s.) For one pill.——*Anti-spasmodic pills*, PARIS H. (Camphor, gr.vj.; nitrate of potassa, gr.iv.; opium, gr.j.; simple syrup, q. s., for two pills.) Dose, from No. 2 to 3 a day.——*Mistura camphorata*, U. S. (Camphor, ʒss.; alcohol, ♏x.; sugar, ℥ss.; water, Oj.)—L. (The same as the preceding, but without sugar.)—D., PR. (Camphor, ℈j.; alcohol, gutt x.; sugar, ℥ss.; water, Oj.)—P. (Camphor, 2; infusion of serpentaria, 576; syrup of bark and liquid acetate of ammonia, āā. 144; tincture of bark, 36.) Dose, a table-spoonful every two hours.——*Emulsio camphoræ*, E. (Camphor, ℈j.; blanched sweet almond and refined sugar, āā. ʒss.; water, Ojss.) In doses of two ounces—P. (Simple emulsion, 96; camphor, gr.vj.) Dose, a table-spoonful.——*Haustus camphoræ*, GUY'S H. (Camphor, gr.vj.; sugar, ʒj.; mucilage of gum Arabic, ʒiij.; water, ℥jss.;) To take at once, every four or six hours.

Externally. *Camphorated enema*, PARIS H. (Camphor, ʒij.; yolk of eggs, q. s.; decoction of linseed, ℔ij.)——*Tinctura camphoræ*, U. S. (Camphor, ℥j.; diluted alcohol, Oj.)—E. (Camphor, ℥j.; rectified alcohol, ℔j.)——*Spiritus camphoræ*, L., D. (Camphor, ℥iv.; rectified spirit, Oij.)—P. (Camphor, 1; alcohol, 50.) Sometimes used internally, in doses of from gutt.xx. to xxx.——*Spiritus camphoratus*, PR., POL., DEN. (Camphor, 1; alcohol, 6.)——*Resolvent lotion*, PARIS H. (Spirit of camphor, ℥viij.; infusion of elder flowers, ℔j.)——*Acidum aceticum camphoratum*, E., D. (Camphor, ℥ss.; alcohol, q. s., to dissolve the camphor; acetic acid, ℥vj.) Let the vapour be breathed in cases of syncope.——*Linimentum camphoratum*, U. S., P. (Camphor, ℥ss.; olive oil, f.℥iv.)—L., D., E., DEN. (Camphor, ℥ss., olive oil, ℥ij.)——*Linimentum camphoræ compositum*, L. (Camphor, ℥ij.; solution of ammonia, f.℥vj.; spirit of lavender, Oj.)——*Linimentum saponis camphoratum*, U. S. (Castile soap, ℥iij.; camphor, ℥ss.; oil of rosemary, f.ʒss.; alcohol, Oij.)——*Opodeldoc*, P., PR. (Camphor, 12; beef marrow-soap, and distilled water of thyme, āā. 32; alcohol, 188; essential oil of rosemary, 3; essential oil of thyme, 1; liquid ammonia, 4.)——*Linimentum saponis camphoratum*, F. (Camphor, 1; white soap, 4; compound alcohol of John's wort, 24.)——*Resolvent liniment*, PARIS H. (Camphor, ʒij.; white oil, ℥ij.; lime water, ℥ss.)

Family Umbelliferæ.

ASSAFŒTIDA. *Gummi resina assafœtidæ.* Gummo-resinous juice, furnished by the *Ferula assafœtida*, Lin. A perennial plant growing in Persia.

B. C. Root similar to that of the parsnip, black externally, white internally, lactescent, fetid; stem naked, cylindrical, five or six feet high; leaves all radical, triternate, of a light green, supported by a peduncle six to eight inches long, of the size of the finger; flowers of a pale yellow colour, in umbels of from twelve to twenty rays; involucrum caducous; involucellum polyphyllous; flowers elliptical, compressed, of a reddish-brown colour.

P. P. This substance is in agglutinated masses more or less voluminous, of a brown or fallow colour, intermixed with white or violet points, becoming easily soft with a gentle heat; of a penetrating smell, and remarkable for its fetidity; of an acrid, bitter, and sharp taste. Its specific gravity is 1.52.

C. P. According to M. Pelletier it is composed of resin, 66; volatile oil, 3.60; gum, 19.44; bassorin, 11.66; super-malate of lime, 0.30. It is soluble in alcohol, ether, vinegar, the yolk of eggs, and partly only in water; triturated with this menstruum it forms a sort of permanent emulsion; with 1-12th of camphor it produces a plastic mass, and is easily reduced to powder with carbonate of ammonia, without undergoing any alteration in its nature.

Th. E. Assafœtida is a very active stimulant; its influence seems to be principally spent on the nervous system. Administered in large doses it produces a sensation of heat in the epigastrium, vomiting, and alvine evacuations, attended with general uneasiness, agitation, and anxiety. In small doses it assists the functions of the stomach, and its secondary action only is felt by the nervous system, upon which it acts most commonly in the same manner as antispasmodics generally. It is very frequently and successfully exhibited in hysteria, hypochondria, nervous colics, asthma, hooping-cough, and other nervous affections. It has been recommended as an emmenagogue and an anthelmintic. Indeed it has proved very successful in certain amenorrhœæ, and in affections dependent upon the presence of worms. Externally, it is employed as a powerful resolvent in cases of indolent tumours, of caries of the bones, &c.

D. & M. of Adm. Gr.x. to ʒss. in pills, or suspended in an emulsion.——*Pilulæ assafœtidæ*, U. S. (Assafœtida, 3 parts; castile soap, 1 part.)—B. (Assafœtida and honey, āā. equal parts.) Dose, from 12 to 20 grains.——*Pilulæ assafœtidæ compositæ*, U. S.——*Pilulæ aloes et assafœtidæ*, E. (Assafœtida, aloes, and soap, āā. equal parts.)——*Pilulæ fœtidæ*, F., Den. (Assafœtida and castoreum, āā. 9; camphor, 3; Dippel's animal oil, 1; tincture of myrrh, q. s.) Dose, gr.vj. to xij.——*Pilulæ assafœitdæ*, New York H. (Assafœtida, ℥j.; camphor, ʒj.; Spanish soap, ℥ss.)——*Antispasmodic pills*, Paris H. (Assafœtida, gr.ij.; musk, gr.ss.) Dose, from No. 2 to 4 a day.——*Pilulæ assafœtidæ compositæ*, Guy's H. (Assafœtida, gr.x.; ipecacuanha and squill, āā. gr.j.; water, q. s., for three pills.)——*Mistura assafœtidæ*, L. (Assafœtida, ʒj.; water, Oss.)——*Lac assafœtidæ*, D. (Assafœtida, ʒij.; pennyroyal water, f.℥viij.)——*Mistura assafœtidæ Millari*, B. (Assafœtida, 1; liquid acetate of ammonia, 4; pennyroyal water, 12.) Dose, a table-spoonful every two hours.——*Tinctura assafœtidæ*, L., E., D., U. S., P. (Assafœtida, 1 part; alcohol, 8 parts.)—Pol., F., Pr., Den., B. (Assafœtida, 1; alcohol, 6.) Dose, from ℈j. to ʒij. and above.——*Spiritus ammoniæ fœtidus*, L. (Spirit of ammonia, Oij.; assafœtida, ℥ij.)—D. (Assafœtida, ʒx.)——*Tinctura assafœtidæ ammoniata*, E. (Ammoniated alcohol, ℥viij.; assafœtida, ℥ss.)——*Æther assafœtidæ*, P. (Assafœtida, 1; sulphuric ether, 4.) Dose, from gutt.xx. to xxx.——*Enema assafœtidæ*, New York H. (Tincture of assafœtida, ʒij.; decoction of linseed, f.℥vj.)—Paris H. (Assafœtida, ʒj.; yolk of eggs, No. 1; water, ℥vj.)—Guy's H. (Assafœtida, ʒij.; decoction of oats, ℥x.)——*Emplastrum assafœtidæ*, E., U. S. (Lead plaster and assafœtida, āā. 2 parts; galbanum and yellow wax, āā. 1 part.)——*Emplastrum fœtidum*, Pr., Pol. (Assafœtida, 4; gum ammoniac, 12; soap, 2; axungia, 1.)—F. (Assafœtida and galbanum, āā. 4; wax, 8; olive oil, 2; colophony, 1.)

GUM AMMONIAC. *Gummi resina ammoniacum.* Inspissated juice, which seems to be furnished by the *Heracleum gummiferum*, Willd. A plant nearly related to the preceding, and native of Africa and of the East Indies.

B. C. Root perpendicular, fleshy, white; stem two or three feet high, ramose, branches opposite; radical leaves tri-lobed, dentated, cordate, pubescent underneath, and supported by a canaliculate petiole; umbels large, and composed of numerous umbellets; fruit oblong, formed by two striated seeds close to each other.

P. P. This substance is in white or yellowish tears, or in masses of various sizes, formed of agglomerated tears, intermixed with seeds; it is of a slightly bitter and nauseous taste; of a weak but unpleasant smell. Its specific gravity is 1.207.

C. P. According to M. Braconnot it is composed of gum, 18.4; resin, 70; glutinous matter insoluble in water and alcohol, 4.4; and water, 6. It becomes soft by heat, but it does not melt; it is partly soluble in water, alcohol, ether, and vinegar.

TH. E. Gum ammoniac possesses very energetic stimulant properties; its action is similar to that of assafœtida, and its principal influence is felt by the nervous system. It is employed as a stimulant and an antispasmodic in asthma, and in cases of neurosis involving respiration and digestion, in hysteric affections, chlorosis, &c. As an expectorant it is administered in chronic pulmonary catarrhs, and other old affections of the lungs. It is likewise exhibited with advantage in certain cases of obstructions of the abdominal viscera, &c. Finally, applied externally, it proves very useful in the treatment of tumours unattended with inflammation, and white swelling of the articulations, scirrhus, &c. It enters into the composition of several plasters.

D. & M. OF ADM. *Internally.* Gr.x. to ʒss. in pills, or suspended in a mixture by means of the yolk of eggs.——*Pilulæ resolvens*, DEN. (Gum ammoniac, medicinal soap, and extract of cicuta, āā. equal parts.)——*Resolvent pill*, PARIS H. (Gum ammoniac and rhubarb, āā. ʒj.; assafœtida and saffron, āā. ʒss.; aloes, gr.x.; medicinal soap, ʒiij.; for three grain pills.) Dose, from No. iv. to vj. a day.——*Mistura ammoniaci*, L., U. S. (Ammoniacum, ʒij.; water, Oss.)——*Lac ammoniaci*, D. (Ammoniacum, ʒj.; pennyroyal water, f.℥viij.)——*Mistura ammoniaci et antimonii*, or *White mixture*, U. S. (Ammoniacum mixture, f.℥iv.; wine of antimony, f.ʒiv.; syrup of tolu, f.℥j.; opiated tincture of camphor, f.ʒiv.)——*Emulsio ammoniaci*, F. (Gum ammoniac, 1; peppermint water, 16.)——*Tinctura gummi ammoniaci*, P. (Gum ammonia, 1; alcohol, 4.) Dose, from ℈j. to ʒss. in a mixture.——*Dr. Paris's expectorant emulsion.* (Gum ammoniac and nitric acid, āā. ʒj.; water, ℥iv.) Dose, a table-spoonful in a mucilaginous drink.

Externally. *Emplastrum ammoniaci*, L., E., U. S., DEN. (Ammoniacum, ℥v.; vinegar, half a pint; dissolve and evaporate to a proper consistence.)——*Emplastrum ammoniaci cum hydrargyri*, L. (Ammoniacum, ℔j.; mercury, ℥iij.; sulphuretted oil, f.ʒj.)—D. The same, except turpentine, ʒij., instead of the sulphuretted oil.)——*Emplastrum ammoniaci*, POL., PR. (Gum ammoniac, 3; gabanum, 1; wax, resin, and turpentine, āā. 2.)—F., A. (Gum ammoniac, galbanum, and wax, āā. 1; litharge plaster, 6.)—GUY'S H. (Gum ammoniac, ℥vij.; vinegar of squill, ℥ij.)

GALBANUM. *Gummi-resina galbanum*, which is furnished by the *Bubon galbanum*, Lin. An African plant, very nearly related to the *Ferula;* it is in tears, or yellowish masses, semitransparent, soft, tenacious; of a granulated fracture; of a strong and peculiar odour; of an acrid and bitter taste. Its composition, according to M. Pelletier, is very similar to that of assafœtida; it possesses nearly the same properties, but it is very little used at present. It enters into the composition of several officinal preparations.

The same may be said of the SAGAPENUM, *Gummi-resina sagapenum*, which is supposed to be furnished by the *Ferula persica*, a plant of Asia Minor, and which is found in commerce in soft masses, pitch-like, brown principally on the exterior, semitransparent, mixed with fragments of seeds; of an acrid and unpleasant taste; of an odour not dissimilar to that of assafœtida, but not so strong.

OPOPANAX. *Opopanax*. A gummo-resinous juice, furnished by the *Pastinaca opopanax*. Lin.; a plant of the Levant and of the south of France. It possesses properties analogous to those of the preceding substance; it is now very little used. It is in irregular tears; angular, opaque, friable; or a reddish colour externally; yellow, intermixed with red internally. Its taste is acrid and bitter, and its very strong smell slightly resembles that of myrrh. It enters into the composition of several officinal preparations.

MARSH SMALLAGE. *Selinum palustre*, Lin. A native plant, growing also in most parts of Europe in marshy places.

P. U. The root.

B. C. Stem straight, cylindrical, branchy; leaves large, petiolate, alternate, three or four-pinnate; folioles linear, oblong, opposite; flowers in terminal and large umbels; involucrum and involucellum composed of eight or ten linear folioles; fruit, compressed, elliptical, winged.

P. P. Root thick, fusiform; of an acrid taste.

C. P. According to M. Peschier, it contains a volatile and a fixed oil; soluble in ether and alcohol; a gummous principle; a yellow colouring matter; a muco-saccharine principle containing nitrogen, a peculiar acid, phosphate of lime, and lignous matter.

Th. E. This plant was formerly considered as an emmenagogue and diuretic, but, as a caustic poison, the internal exhibition of which might be dangerous, it was abandoned. Drs. Schmutziger, Arminan, and John, of Switzerland, have lately published cases of epilepsy treated successfully by this remedy. The dose is from ten to twenty grains, according to the age of the patient, repeated every five hours, and after a time gradually augmented. The period of treatment varies from six weeks to three months. Dr. Schmutziger forbids the employment of the selinum when there exists obstructions in any of the abdominal organs, or when the genital apparatus is in a state of exalted sensibility; and, according to Dr. John, this remedy augments the violence of the disease in those persons whose circulatory and nervous systems are very irritable.

Several children at Geneva, from twelve to eighteen months old, who had been sufferers from convulsions during the process of dentition, experienced almost immediately the good effects of this substance, administered four times a day, in doses of two grains.

Family Aroideæ.

Skunk Cabbage. Swamp Cabbage. *Symplocarpus fœtida*, Salisb. *Pothos fœtida*, Mich. *Dracuntium fœtidum*, Willd. *Ictoides fœtidus*, Bigelow. A perennial plant, native of North America, growing in boggy woods, swamps, and other moist places.

P. U. The roots.

B. C. Spathe ventricose, ovate, acuminate; spadix roundish, covered with hermaphrodite flowers; calix deeply four-parted, persistent; segments cuculate, truncate, becoming thick and spongy; petals none; style pyramidal, four-sided; seeds solitary, immersed in the spongy receptacle; leaves very large, smooth, and green, strongly veined and entire, preceded by conspicuous sheathing capsules.

P. P. Root verticillately fibrous, truncate; fibres whitish, coloured with brownish red rings. Every part of the plant, even the seeds, is imbued with a peculiar fetid smell, resembling that of assafœtida, or the odour thrown off by the skunk or pole cat, whence its name.

C. P. It seems to contain a volatile acrid principle, readily dissipated by heat; a resinous substance, and a gummy or mucous principle. The seeds contain a considerable quantity of fixed oil.

Th. E. The root of this plant possesses very considerable anti-spasmodic powers, similar to those of assafœtida, and other fetid gums. It has been highly recommended as a palliative in spasmodic asthma. Dr. Eberle remarks that he derived very considerable advantage from the employment of this remedy, in several instances of this disease. Dr. Thatcher, of Boston, states, that two tea-spoonfuls of the powdered root gave very prompt and effectual relief in a case of hysteria, after the ordinary remedies for such affections had beeen used without benefit. The same writer says, that it has afforded much advantage in chronic rheumatism; in wandering spasmodic pains, and in hooping-cough; in chronic coughs of patients having a cold and phlegmatic habit. In spasmodic affections of the abdominal muscles, during parturition, or after delivery, this root has proved very beneficial.

As its active properties depend on a volatile principle, which is impaired by long keeping, especially in powder, it is better to preserve it in well-stopped bottles, cut in slices, ready to pulverize when wanted. It is given in pills, or mixed with syrup, in doses of ten to forty grains, two or three times a day. Decoction greatly impairs its virtues.

Family Valerianæ.

WILD VALERIAN. *Valerianæ sylvestris radix. Valeriana officinalis,* Lin. A perennial indigenous plant, flowering in May and June.

P. U. The root.

B. C. Stem cylindrical, striated, villose, from three to four feet high; leaves deeply cut, the inferior ones petiolate, the superior sessile; flowers small, of a pink-white colour, cymose, and supported on peduncles several times tri-forked; three stamina; fruit, an ovoid capsule surmounted by a plumose pappus jutting out from the calix.

P. P. The valerian root is composed of a great number of cylindrical radicles, two or three lines in diameter, whitish internally and yellowish externally, possessing scarcely any smell when fresh, acquiring on the contrary, a very strong and fetid odour by desiccation; its taste is acrid and bitter.

C. P. According to Tromsdorff, it contains a peculiar principle, soluble in water, and insoluble in alcohol and ether, 48; black resin, 24; a very volatile oil of a greenish white, of a strong camphorated smell, 1; gummous matter, 36; fecula, 6; and lignin, 266. Boiling water, alcohol, and ether, take up its active principles.

TH. E. Valerian is a very powerful general excitant, but its influence is principally felt by the brain. Indeed, in large doses it causes dazzling, convulsive contractions, agitation, &c. In small doses, it acts as an anti-spasmodic and a tonic. It is used with advantage in hysteria, epilepsy, certain headaches, and other neuroses. It proves frequently very useful in hypochondria, and serious fevers with atonic symptoms. Finally, it has been recommended as a powerful febrifuge, and it has, in fact, proved very useful in certain intermittent fevers.

D. & M. OF ADM. *Powder*, ℈ij. to ʒj. two or three times a day, and gradually to ʒiv. and ʒvj. *Decoction*, ʒj. to ʒiv., to ℔ij. of water.——*Infusum Valerianæ*, U, S. (Valerian, ʒij.; boiling water, Oss.)—D. (Valerian, ʒij.; boiling water, f.℥vij.)——*Aqua distillata valerianæ*, P., A. Dose, from ℥ij. to ℥iv.——*Extractum valerianæ*, D., P., A., POL., PR., DEN. Dose, from ℈j. to ʒss.——*Tinctura valerianæ*, L., D., U. S. (Valerian, ℥iv.; diluted alcohol, Oij.)—P. (Valerian, 1; alcohol, 6.)—A. (Valerian, 1; alcohol, 12.)——*Tinctura valerianæ ammoniata*, L., D., U. S. (Valerian, ℥ij.; ammoniated alcohol, Oj.)—PR., POL., DEN. (Valerian, 1; volatile spirit of ammonia, 12.) Dose, from ʒj. to ʒij. in milk, or mucilaginous drink.——*Tinctura valerianæ æthereæ*, POL., F., PR. (Valerian, 1; sulphuric ether, 8.) Dose, from ʒss. to ʒj.——*Oleum valerianæ*, PR., POL., A. Dose, from gutt.iv. to gutt.vj.——*Oleo-saccharum valerianæ*, PR. (Oil of Valerian, 1; sugar, 24.)

The GARDEN VALERIAN, *Valeriana major*, *V. phu*, Lin., the SMALL VALERIAN, *V. dioica*, Lin., and the CELTIC VALERIAN, or NARD, *V. celtica*, Lin., possess the same properties as the preceding, but in a weaker degree, and may be used as a substitute for it. They were once frequently resorted to in the practice of medicine; they are now almost entirely neglected.

Family Aurantiaceæ.

ORANGE FLOWERS. *Aurantii flores. Naphæ flores.* Flowers of the *Citrus aurantium.* (See page 289.)

P. P. These flowers are white, of a most delightful smell, of a bitter, aromatic taste.

C. P. They contain an essential oil, called *Neroli*, a yellow bitter matter, soluble in water and alcohol, and insoluble in ether; some gum, albumen, acetate of lime, free acetic acid, and sulphur. Water and alcohol dissolve their active principles.

TH. E. The stimulating action of this remedy is rather weak, but it exercises a very decided influence on the nervous system, upon which it acts as an anti-spasmodic. It is daily employed with a good deal of success in a great number of nervous affections. The distilled water of these flowers, which is the preparation most commonly used, enters into the composition of a great number of mixtures.

D. & M. OF ADM. *Infusion*. One to two pinches to ℔ij. of boiling water. Distilled water, P.—*Aqua florum aurantii* seu *Naphæ*, A., POL., DEN., F., PR., H. Dose, from ℥j. to ℥iv.——*Syrupus florum aurantii*, P., POL., PR. (Distilled orange flower water, 1; sugar; 2.) Dose, from ℥j. to ℥ij.——*Essential oil*, P. Dose, from gutt.ij. to gutt. vj.

ORANGE LEAVES. *Aurantii folio.* Leaves of the *Citrus aurantium.*

P. P. They are oval, entire, smooth, shining on both sides, and furnished with a great number of vesicles containing an essential oil of an aromatic odour, and of a bitter and warm taste.

C. P. They contain an essential oil, an extractive matter, and some tannin. Water and alcohol take up their active principles.

TH. E. The orange leaves possess tonic and stimulant properties rather energetic. They seem, besides, to act upon the nervous system in the same manner as the flowers. They are often employed in small doses in nervous diseases, such as certain kinds of dyspepsia, hysteria, convulsive coughs, palpitations, &c. In large doses they are administered in epilepsy, and some advantages which had been obtained from their employment induced the belief that they were a sure remedy for that dreadful disorder; but more careful observation has destroyed the expectations which had been entertained.

D. & M. OF ADM. Powder, as anti-epileptic, ℈j. to ʒj. gradually, in the form of bolus, or of electuary made with honey. Infusion, No. iv. to x. to ℔ij. of water Decoction, No. xxx. to xxxvj. to ℔ij. of water.

Family Tiliaceæ.

LIME OR LINDEN TREE FLOWERS. *Flores tiliæ. Tilia europæa,* Lin. A native tree, common in the woods.

P. U. The flowers.

B. C. Trunk forty to fifty feet high; leaves alternate, cordiform, dentate, villose; flowers yellowish, united four or five together in a small umbel, adnate to the centre of a long and narrow bracte or floral process; calix caducous, five-parted; corolla, 5 petals; stamina numerous and distinct; ovary with five bi-ovulate cells; fruit, a globular, five-celled capsule.

P. P. These flowers have a very pleasant smell, and a sweet and mucilaginous taste.

C. P. They contain, as do all the other parts of the tree, a large quantity of mucilage. Water and alcohol take up their active principles.

TH. E. The lime-tree flowers are considered as antispasmodic and slightly diaphoretic; but they seem to possess these properties in a very small degree. They are one of the most popular medicines in France and some other parts of Europe. Their infusion in distilled water are daily administered in a number of diseases, and especially in nervous affections. They form the menstruum of many mixtures.

D. & M. OF ADM. Infusion, one pinch to ℔ij. of boiling water. Infusion, called *Tilleul-orange*, PARIS H. (Infusion of lime-tree flowers, ℔ij.; orange flower water, ℥ij.; spirit of sulphuric ether, ʒij.)——*Distilled water*, P. Dose, from ℥j. to ℥iv.

CAJEPUT OIL, *Oleum cajeput* is obtained by distillation from the leaves of the *Melaleuca leucadendron*, Lin. *Melaleuca cajeputi*, Smith and Maton; a shrub of the family *Myrtineæ*, growing in Amboyna and Borneo; is not used in France, but very much employed in Asia, and occasionally in England. It is transparent, of a fine green colour, very fluid, lighter than water, very volatile, of a strong smell, similar to that of a mixture of camphor and essence of turpentine, of a sharp and fresh taste, analogous to that of camphor. It possesses very decided stimulant and diaphoretic properties, and seems to act also very efficaciously as an antispasmodic. English practitioners sometimes administer it in gastralgia, hysteria, and other nervous diseases, in chronic rheumatic affections, certain kinds of palsies, &c. Dose, gutt.iij. to vj., and more, on sugar, or dissolved in alcohol. Externally, this oil is very successfully employed in frictions, mixed with olive oil, in order to soothe the pains of gout and rheumatism, in headaches, &c.

The PÆONY ROOT. *Pæonia officinalis*, Lin., of the family *Ranunculaceæ*, has been recommended as one of the most powerful antispasmodics, and was formerly employed in epilepsy. It possesses, however, but a very feeble action. It was administered in powder, in the dose of ʒss. to ʒj. A *distilled water* is likewise prepared from its flowers, which is used as a menstruum for antispasmodic and stimulant mixtures.

The STINKING ORACH, *Chenopodium vulvaria*, Lin., an European plant of the family *Chenopodeæ*; has a very fetid smell, and contains free sub-carbonate of ammonia. It is occasionally employed as an antispasmodic in hysteric affections.

ANTISPASMODIC SUBSTANCES OF THE ANIMAL KINGDOM.

MUSK. *Moschus*, a peculiar substance, secreted by a kind of bag, two or three inches in diameter, situated under the skin, behind the navel, and before the prepuce, of a mammiferous animal called *Moschus moschiferus*, Lin., of the class of ruminating animals without horns. This quadruped is an inhabitant of Thibet, Independent Tartary, China, and Siberia.

This secretory organ is peculiar to the male; the female has it not. This bag is more abundantly provided in the rutting time. Indeed, it is then that the secreted humour has the strongest smell.

F. P. Musk is solid, in unctuous grains of a deep brown colour, with a reddish hue, which, at first sight, has some resemblance to dry and coagulated blood. Its odour is peculiar, very diffusible and persistent; its taste is slightly bitter and disagreeable. In commerce we always require that it should be contained in its membranous bag to insure its genuineness.

C. P. According to Messrs. Blondeau and Guibourt it is composed of water, ammonia, stearine, elaine, cholesterine, an acid oil combined with ammonia, a volatile oil, an unknown acid, gelatine, albumen, fibrin, a carbonated matter soluble in water, salts with base of ammonia, potassa, and lime; finally, hair, sand, and other foreign matters. Musk is very inflammable; it burns with a white flame, leaving a residue of a spongy, light charcoal. Boiling water and alcohol dissolve it in part, and sulphuric ether almost completely.

INCOMP. SUBST. Deuto-chloride of mercury, sulphate of iron, nitrate of silver, and infusion of Peruvian bark.

TH. E. Musk acts like the diffusible stimulants, but it exercises, moreover, on the nervous system, a peculiar and very remarkable action, which has caused it to be considered as one of the most powerful antispasmodics we possess. It is employed with advantage in typhoid fevers, and in those complicated with asthenia, in order to abate the nervous symptoms, such as delirium, subsultus tendinum, convulsive motions, &c. It has been likewise recommended in hooping-cough, epilepsy, tetanus, hydrophobia, hysteria, and other affections merely spasmodic. United with ammonia it has been used with success in stopping the progress of gangrene. Administered in an enema it very frequently succeeds in calming the convulsions of children, produced by dentition. This remedy is generally very little used, owing to its excessive price, and the difficulty of obtaining it pure.

D. & M. OF ADM. Gr.vj. to ʒss. in pills, or suspended in a mixture by means of a mucilage.——*Mistura moschi*, L., U. S. (Musk, gum Arabic, and sugar, āā. ʒj.; rose water, f.℥vj.) Dose, from ℥j. to ℥ij. every two or three hours.——*Musk mixture*, PARIS H. (Musk, gr.xij.; sugar, ʒij.; water, ℥ij.)——*Pulvis moschi compositus*, R. (Musk, 8; valerian, 10; camphor, 3.) Dose, from gr.x. to xx.——*Musk pills*, PARIS H. (Musk, ʒij.; oxide of zinc, ʒj.——*Anti-hysteric pills*, PARIS H. (Musk and extract of valerian, āā. ℈j.; extract of opium, gr.xij.) For sixteen pills.——*Tinctura moschi*, D., U. S. (Musk, ʒij.; alcohol, Oj.)—P. (Musk, 1 part; alcohol, 4 parts.)——*Tinctura moschi ætherea*, P. (Same proportions and doses.)

CASTOR. *Castoreum.* A peculiar substance, analogous to musk, secreted by two pairs of membranous bags, elongated and pyriform, situated under the skin of the abdomen, between the anus and pudendum of a mammiferous animal of the family *Rodentia*, called beaver, *Castor fiber*, Lin., inhabiting the northern parts of Europe, Asia, and America.

P. P. This substance is solid, brittle, like resin, nevertheless slightly unctuous, of a reddish-brown colour, of a strong, disagreeable, and peculiar smell, of a bitter, slightly acrid, and nauseous taste. It is found in commerce in the bags in which it is secreted. These two bags are united together by a kind of natural ligament, which seems to be the excretory duct. They are of a brown colour, dry and wrinkled, pyriform, and divided internally into cells by membranous partitions. Of these two bags, one larger, and of a more round shape, contains the true castor; the other, much smaller, is almost empty, and contains hardly any thing but a fatty substance.

C. P. Castor contains, according to M. Bizio, a peculiar matter, called *Castorine*, and according to the analysis of Messrs. Bouillon-Lagrange, and Laugier, an odorous volatile oil, benzoic acid, cholesterine, a resin, a reddish colouring matter, iron, salts with base of potassa, lime, and ammonia. It is very little soluble in water, but dissolves much better in ether and alcohol.

CASTORINE is, according to M. Bizio, the active principle of castor; it is neither acid nor alkaline; it is solid, and it crystallizes in thin, elongated, and diaphanous prisms, disposed in bundles; of a smell similar to castor, and of a copperish taste. This substance, almost insoluble in cold water and alcohol, dissolves in 100 parts of the latter liquid when boiling. Sulphuric and acetic acids dissolve it without the assistance of heat. It is obtained by boiling one part of castor in six parts of alcohol; filter the liquor and leave it to itself, and the castorine precipitates by degrees.

TH. E. Castor, as well as musk, is endowed with very valuable stimulant and antispasmodic properties. It acts evidently on the nervous system in a special manner; and this action is the more marked in proportion as the disorder in the functions of this system is the more considerable, provided, however, that this disturbance be not attended with inflammation. It is consequently employed with success for the cure of spasmodic affections, such as hysteria, hypochondria, nervous palpitations, convulsive hiccough, epilepsy, nervous asthma, amenorrhœa depending on spasmodic state of the uterus, &c. On account of its stimulating action it has proved useful in typhoid, adynamic, and ataxic fevers, to restore strength, and abate the nervous symptoms.

D. & M. OF ADM. Powder, gr.x. to ℈j. and even ʒj. several times a day, in pills or suspended in a proper menstruum.——*Antispasmodic pills*, PARIS H. (Castor, gr.vj.; valerian, gr.xxx.; oxide of zinc, gr.xx.; simple syrup, q. s. for three pills.) No. iij. a day.——*Tinctura castorei*, L., D., U. S. (Castor, ℥ij.; alcohol, 0ij.)—E. (Castor, ℥jss.; alcohol, ℔j.—P. (Castor, 1 part; alcohol, 4 parts.)—POL., A., DEN., PR. (Castor, 1; alcohol, 6.)—R. (Castor, 1; alcohol, 24.) Doses in proportion to the strength.——*Tinctura castorei ætherea*, P. (Castor, 1; sulphuric ether, 4.)—PR., POL., DEN. (Castor, 1; sulphuric ether, 6.), gutt.x. to xxx. ——*Tinctura castorei composita*, E. (Castor, ℥j.; assafœtida, ℥ss.; ammoniated alcohol, ℔j.) From ʒss. to ʒij.——*Dr. Paris's Antispasmodic mixture.* (Tincture of castor and volatile tincture of valerian, āā. ʒj.; powder of valerian, ℈j.; camphorated mixture, f.ʒxij.) Three times a day.

Externally. Powder, ʒss. to ʒj., suspended in a mucilage of gum Arabic, for an enema.

CIVET. *Zibethum*. A substance secreted like the preceding, by a bag situated near the anus of the CIVET, *Viverra civetta*, Lin. A carnivorous quadruped, nearly related to the fox and cat. It is of a thick consistence, unctuous, whitish, of a strong, agreeable smell, and of a slightly bitter taste. It possesses the same virtues as musk and castor, and was formerly employed in the same cases as these two substances. It is now almost out of use.

AMBERGRIS. *Ambragrisea*. *Ambarum cineritum*. A sort of Bezoar or morbid concretion which forms in the intestines of the *Catodon macrocephalus*, Lacép, a cetaceous fish. It is most commonly found in the cœcum, amidst a sort of soft substance of an orange or red-yellow colour, and among numerous remains of cuttle-fish bones. It is principally found floating on the surface of the sea, on the coast of India, or in the neighbourhood of China and Japan, &c.

P. P. Ambergris is in irregular masses, most commonly globular, of various sizes and weights, formed of concentric layers, of a granulated grayish substance, intermixed with blackish or whitish points, It is opaque, of a scaly fracture, of a variable consistence, but commonly hard and brittle, easily retaining, however, the impression made with the finger nail; of an insipid taste, and of a strong smell *sui generis*.

C. P. This substance, according to Pelletier, is composed of Ambreine, a peculiar proximate principle, containing nitrogen, crystallizable and analogous to cholesterine, 52.7; resin, 30.8; benzoic acid, 1.11; and a carbonated substance, 5.4. Heated, it becomes soft and melts in a thick and blackish oil, which volatilizes without leaving any residue. It burns rapidly, and with a vivid light. It is insoluble in water, but dissolves easily in alcohol, ether, and certain fixed oils.

Th. E. Ambergris is a moderately powerful general excitant, the action of which seems to be principally spent on the nervous system. It has been employed with success in cases of neurosis, convulsions, adynamic fevers, &c. It is now very seldom used. It formerly entered into a great number of officinal preparations.

D. & M. of Adm. Gr.vj. to ℈j. in powder.——*Pulvis ambræ moschatus*, B. (Ambergris, 18; musk, 3; oil of cinnamon, 2; sugar, 288.) gr.xij. to ℈j.—*Trochisci de ambrâ*, B. (Ambergris, 6; oil of cinnamon, 3; musk, 2; sugar, 2880; mucilage of gum Arabic, q. s.)——*Tinctura*, P. (Amber, 1; alcohol, 2 ℈j. to ʒss. in a mixture.——*Tinctura ambræ cum moscho*, Pr. (Ambergris and musk, āā. 1; sulphuric ether, 4; alcoholic sulphuric ether, 24.) Dose, gutt.vj. to xxx.——*Tinctura ambræ balsamica Dippelii*, B. (Ambergris and balsam of Peru, āā. 1; carbonate of potassa, 3; alcohol, 36.) Dose, gutt.xv. to xxx.

Succin or Yellow Amber. *Succinum* or *Ambarum luteum*. A substance nearly related to resins, found in tertiary soils and upon the shores of the Baltic sea.

P. P. It is solid, hard, brittle, of a vitreous fracture, often transparent, sometimes opaque, capable of acquiring a polish, of a more or less deep yellow or even red hyacinth colour, inodorous, insipid, of a specific gravity of 1.078.

C. P. Heated in the air, succin becomes soft, melts and burns, emitting an aromatic odour. It gives over, by distillation, a peculiar acid called *succinic*, some essential oil, water, acetic acid, a peculiar matter, (investigated by Messrs. Colin and Robiquet), and a good deal of charcoal. It is insoluble in water, and dissolves partly in alcohol and in a solution of subcarbonate of potassa. After having been melted, or after being mixed with a little camphor, it becomes soluble in fixed and volatile oils, and forms thus a fine varnish, much sought after in the arts.

Th. E. This substance has been highly recommended as an anti-spasmodic; it entered formerly into the composition of a great number of preparations. It is now very seldom employed. Dr. Hufeland, however, asserts, that he has obtained great advantages from its employment in sphacelus. The essential oil it yields by distillation, is sometimes administered in spasmodic affections, and is principally used in frictions, in rheumatic, gouty affections, &c.

D. & M. of Adm. *Tinctura succini*, P. (Succin, 1; alcohol, 16.)—Pr., Pol. (Succin, 1; alcohol, 4.) Dose, from gutt.x. to ℈j., in a mixture.——*Oleum succini*, L., E., D., U. S., P. Dose, from gutt.iv. to vj.
Externally, in frictions.

Succinic Acid, *Acidum succinicum*, exists, already formed, in succin, from which it is extracted by distillation; it is white, transparent, of an acidulous and acrid taste, and crystallized in prisms. It is very soluble in water, and forms with salifiable bases salts, which are used as chemical tests. This acid is almost out of use at present, except in the preparation of syrup, which is frequently added to antispasmodic mixtures, in doses of ʒij. to ℥j., and called *Karabe syrup*, (Succinic acid, 1; syrup of opium, 192.)

Dippel's Animal Oil, *Oleum animale æthereum*, is obtained by distilling solid animal matters, such as bones, horns, &c. It is white, turning brown on exposure to air, of a very fetid smell, and of an acrid and most disagreeable taste. In large doses it proves a very active poison; in small doses it has, for a long time, been recommended as an antispasmodic, and has been administered in epilepsy. It is now almost out of use. It was given in the dose of from five to twenty drops, on sugar, or dissolved in water.

CHAPTER VIII.

NARCOTIC REMEDIES.

Narcotic remedies, (ναρκοω, I stupify), called likewise anodyne, (α, priv., and οδυνη, pain), stupefacient, sedative, hypnotic, (υπνοω, I put to sleep), &c., are distinguished from all others by the special and primary influence which they exercise on the nervous system, and especially on the brain; an influence characterized by a diminution of activity, and even temporary interruption of the functions of these important organs. Administered in very small doses, they have scarcely any action except a local one, and they act merely by diminishing the sensibility and irritability of the parts with which they are in contact. In somewhat larger doses, their action extends farther; they produce a slight degree of debility, a state of general repose, which is most commonly followed by sleep. But should the quantity be still greater, they produce a complication of symptoms, called *narcotism*. This state is characterized by heaviness of the head, dimness of sight, diminution of the activity of the intellectual faculties, muscular weakness, prostration of strength, and a sleep more or less comatose, sometimes calm, but most commonly very agitated, or else a violent cephalalgia, vertigo, convulsive motions, hallucinations, and a peculiar state, resembling both sleep and intoxication, during which, the mental faculties are annihilated, and the patient, although benumbed and extremely languid, experiences, however, a violent agitation, anxiety, &c. These symptoms, when the dose of the narcotic substance is sufficiently powerful, are generally followed by a profound coma, precursor of death. During narcotism, the circulation is sometimes slightly accelerated, at others it is slower, but the pulse is almost always unequal and irregular; respiration is laborious, and the capillary circulation of the skin seems to go on with greater difficulty; an abundant perspiration frequently takes place. The effects of these remedies upon the digestive organs is still more remarkable, for even in small doses they diminish appetite, and when they produce narcotism, the process of digestion is almost entirely stopped.

After all we have stated, it is evident that the action of narcotics differs materially from that of the remedies which have been previously mentioned. The influence of those remedies, it is true, is spent in a special manner on the nervous system; but they stimulate it more or less, imparting to it strength, as it were, and regulating its action. Narcotics, on the contrary, whether they act by diminishing the sensibility and contractility without producing sleep, in the same manner as the hydro-cyanic acid, or whether they affect, at the same time, the intellectual faculties, and produce narcotism, as opium, have always a tendency to weaken, or even destroy, more or less completely, the functions of the nervous system.

Most of the remedies endowed with these properties result vegetables remarkable for their virose smell; and most of them owe their activity to the presence of a peculiar principle, of the nature of an organic alkali; others, the odour of which is not less characteristic, contain hydro-cyanic acid as their active principle.

We have recourse to narcotics principally as a means of soothing pain and procuring sleep. Administered in a proper manner, they are useful in the treatment of neuroses in general, neuralgia, rheumatic and other pains, fevers attended with nervous symptoms, in the last period of cancerous affections, &c. Their employment is contra-indicated whenever the debility of the patient is very great. They require to be used with a good deal of caution in acute inflammations of the internal organs, and only in cases where the violence of the pain would exhaust the strength of the patient.

Family Papaveraceæ.

OPIUM. *Opium.* Concrete juice, extracted from the white or somniferous poppy, *Papaver somniferum*, Lin., a plant, native of Asia, and which has been cultivated for some time in England.

B. C. Stem cylindrical, smooth, from three to four feet high; leaves sessile, elongate, semi-amplexicaule, glaucous, irregularly cut on the borders; flowers solitary, terminal, red or white, very large; corolla four petals, about one hundred stamina; stigma orbicular, stellate; fruit, a round capsule, crowned by the persistent stigma, and containing numerous white or grey seeds, very small and reniform.

P. P. Opium, such as it is brought from the Levant, is in flattened, circular masses, reddish externally, of a blackish brown internally, hard, with a shining and compact fracture, of a bitter, acrid, and nauseous taste, of a peculiar *virose* smell, and of a specific gravity of 1.336. Worked with the fingers, this substance becomes soft, tenacious, resembling pitch.

C. P. Opium is partly soluble in water, alcohol, ether, vinegar, lemon juice, &c. Rubbed in warm water, five-twelfths are dissolved, six-twelfths are suspended, and one-twelfth remains insoluble. Heated in the air it inflames and burns rapidly. It is composed of an alkaline principle, discovered by Sertuerner, and called *Morphia*, which, according to Robinet's experiments, is combined with a peculiar acid, which he designates by the name of *codeic;* of another peculiar acid, called *meconic acid*, which, in opium, seems to be combined with soda; of a crystallizable principle, discovered by Derosne, and named *narcotine;* of extractive matter, mucilage, fecula, resin, fixed oil, a glutinous matter similar to caoutchouc, a vegeto-animal substance, vegetable fibres, and sand.

INCOMP. SUBST. Ammonia, carbonates of soda and potassa, corrosive sublimate, nitrate of silver, acetate of lead, the sulphates of copper, zinc, and iron, and the infusion of galls.

PREP. The common opium of commerce is obtained by repeated incisions made in the capsules of the poppy. A viscous juice exudes from the wounds, which becomes thick by exposure to the air. It is then mixed with the inspissated juice expressed from the plant.

For pharmaceutical purposes, common opium is purified by being treated with a large quantity of cold water; by this operation an *aqueous extract of opium* is obtained, which is far preferable to that substance itself.

TH. E. Opium seems to act directly on the nervous system. Administered in small doses, it diminishes sensibility, and produces a calm which leads to sleep. This action is particularly remarkable when the patient is a prey to violent pains. In rather larger doses, it acts, first, as a very energetic stimulant; it increases the strength, frequency, and fulness of the pulse, as well as the animal heat and muscular power, and it exalts the intellectual functions; but these effects are gradually succeeded by languor, heaviness of the head, a general lassitude, and an agitated sleep. In large doses, it proves one of the most violent poisons. It induces a very intense inflammation of the digestive organs, accelerating, and sometimes diminishing the activity of the circulation, but under every circumstance the pulse is irregular. It produces a sort of intoxication, coma, in a word, all the symptoms which characterize *narcotism*, and which may be followed by death. Opium is frequently used to mitigate pains, to relieve watchfulness, and diminish in many cases the exaltation of sensibility, and especially in most of the chronic organic diseases. It proves very successful in the treatment of diarrhœa and cholera morbus.

It has been recommended in intermittent fevers, either alone, or in conjunction with tartar emetic or Peruvian bark. It is very useful in neuralgia, and, generally, in all nervous and spasmodic affections. In *delirium tremens*, tetanus, and hydrophobia, it has been exhibited in very large doses. Its employment is contra-indicated in all diseases attended with considerable inflammation, and when the febrile symptoms are much developed. However, combined with calomel, it frequently produces very good effects in certain inflammations depending on local causes, such as fractures, burns, &c. It is one of the remedies most used, and one which acts most efficaciously when administered with judgment.

D. & M. of Adm. *Opium purificatum.* *Extractum opii vinosi*, seu *laudanum*, P.——*Extractum opii aquosum*, P., D.——*Extractum opii gummosum*, B.——*Extractum opii*, L., E., Pol., Pr., A., Den., &c. Dose, from gr.¼ to gr.ij.

Pulvis cornu usti cum opio, L. (Opium, ʒj.; burnt and prepared hartshorn, ℥j.; cochineal, ʒj.——*Pulvis opiatus*, E. (Opium, ʒj.; prepared chalk, ʒix.)—Pr. (Opium, 1; gummous powder, 9.) Dose, gr.v. to xx.——*Pulvis cretæ comp. cum opio*, L. (Compound powder of chalk, ℥vj.; opium, ℈iv.), twenty grains contain half a grain.——*Pulvis ipecacuanhæ et opio*, E., U. S.——*Pulvis ipecacuanhæ compositus*, L.——*Pulvis ipecacuanhæ cum opio*, Pr., Pol., A., Den., F.——*Dover's powder.* (Opium and ipecacuanha, āā. 1; sulphate of potassa, or sugar, 8.), ten grs. contain one gr. of opium.)—P. (Opium, ipecacuanha, and liquorice, āā. 1; sulphate and nitrate of potassa, āā. 4.)——*Pulvis ipecacuanha opiatus*, R., B. (Opium and ipecacuanha, āā. 1; sulphate of potassa, 9.), eleven grains contain one of opium.——*Pilulæ opii*, U. S. (Opium, ʒj.; Castile soap, gr.xij. for 60 pills.)——*Pilulæ saponis cum opio*, L. (Opium, 1; hard soap, 4)——*Pilulæ opiatæ* or *thebaicæ*, E. (Opium, 1 part; extract of liquorice, 7 parts; pimento berries, 2 parts.) 10 grains contain 1 grain of opium. Dose, from gr.v. to xx.——*Pilulæ e styrace*, D. (Purified storax, ʒiij.; purified opium and saffron, āā. ʒj.) 5 grains contain 1 grain of opium. Dose, gr.ij. to v.——*Pilulæ cynoglossi*, P. (Opium, cynoglossum root, and hyosciamus seeds, āā. 8; myrrh, 12; olibanum, 10; saffron and castor, āā. 3; syrup of opium, q. s.) 9 grains contain 1 grain of opium.——*Camphorated anodyne pills*, New York H. (Opium, ʒij.; camphor, ℥ss.; mucilage of gum Arabic, q. s. for pills, No. cxx.)—Paris H. (Opium, gr.iij.; camphor, gr.vj.; syrup, q. s. for 6 pills.) Dose, from No. j. to iij. a day.——*Pilulæ antimonii cum opio*, Guy's H. (Opium, gr. ij.; tartrate of antimony and potassa, gr.j.; theriaca, q. s. for 4 pills.) Dose, from No. j. to ij. once or twice a day.——*Pilulæ ipecacuanhæ cum opio*, Guy's H. (Opium and ipecacuanha, āā. gr.j.; conserve of roses, q. s. for 1 pill.) Dose, No. j. at night.——*Dr. Paris's calming pills.* (Opium, gr.ij.; aromatic confection, ℥ss.; for 8 pills.) Dose, No. j. every 4 hours——*Confectio opii*, L. (Opium, ʒvj.; long pepper, ℥j.; ginger, ʒij.; caraway seeds, ʒiij.; syrup, Oj.) 36 grains contain one of opium. Dose, from gr.xii. to ℈ij.——*Electuarium opiatum*, olim *thebaicum*, E. (Aromatic powder, ℥vj.; Virginian snake root, ℥iij.; opium, diffused in Spanish wine, q. s. ℥ss.; syrup of ginger, ℔j.) 43 grains contain one of opium.——*Electuarium astringens opiatum*, seu *diascordium*, P., contains 1-184th of opium.——*Electuarium polypharmacum opiatum*, seu *theriaca*, P., contains 1·88th of opium.——*Trochisci glycyrrhizæ cum opio*, E., U. S. (Opium, ʒij.; tincture of tolu, f.℥ss.; syrup, f.℥viij.; extract of liquorice and gum Arabic, āā. ℥v., to form into troches, each weighing 10 grains, six of which contain one grain of opium.)

Tinctura opii, L., U. S. (Opium, ℥ij.; diluted alcohol, Oij.) ♏xix. contain one grain of opium.—E. (Opium, ʒx.; proof spirit, ℔ij.) ♏xx. contain one grain of opium.—D. (Opium, ʒx.; proof spirit, Oj.) ♏xiv. contain one grain of opium.—P. (Opium, 1; alcohol, 24.) ♏xxx. contain opium one grain.—Pr., Pol., F. (Opium, 1; alcohol and cinnamon water, āā. 3.) f.ʒj. contains ten grains of opium.——*Tinctura opii crocata*, *Sydenham's laudanum*, P., Den., Pol., Pr., B.

(Opium, 16; saffron 8; cinnamon and cloves, āā. 1; Spanish wine, 150.) 20 drops contain about one grain of opium.——*Vinum opii*, U. S. (Opium, ℥ij.; cinnamon and cloves, āā. ʒj.; diluted alcohol, f.℥ij.; Spanish wine, Oj.)—L., E. (Extract of opium, ℥j.; cinnamon and cloves, āā. ʒj.; proof spirit, f.℥vj.; distilled water, f.℥x.)——*Tinctura camphoræ opiata*, U. S. (Opium, benzoic acid, oil of anise, āā. ʒj.; liquorice, ℥ss.; clarified honey, ℥ij.; camphor, ℈ij.; diluted alcohol, Oij.) ——*Tinctura camphoræ composita*, L.——*Tinctura opii camphorata*, sive *Elixir paregoricum anglorum*, E., D., Den. (Camphor, ℈ij.; opium and benzoic acid, āā. ʒj.; proof spirit, Oij.)——*Tinctura opii benzoica*, Pr. (Opium, benzoic acid, camphor, and aniseed, āā. 1; alcohol, 192.) These preparations contain one grain of opium to f.℥ss. Dose, from ʒj. to ʒiv.——*Tinctura opii ammoniata*, formerly *paregoric elixir*, E. (Opium, ʒij.; benzoic acid, saffron, āā. ʒiij.; volatile oil of aniseed, ʒss.; ammoniated alcohol, ℥xvj.) Each f.ʒj. contains one grain.——*Acetum opii—Black drop*, U. S., Dr. Paris. (Opium, ℔ss.; vinegar or verjuice, Oiij.; nutmeg, ℥jss.; saffron, ℥ss.; boil them down to a proper consistence and add sugar, ℥iv.; yeast, f.℥j.)——*Vinum opiatum fermentatione paratum*, or *Abbé Rousseau's laudanum*, or *drops*, P. (White honey, 96; warm water, 384; yeast, 1; dissolve the honey with water, and set it aside in a warm place; as soon as fermentation has commenced add good opium, 32, dissolved previously in water, 96; allow the whole to ferment together for a month at a temperature of 30° Centig. (86° Fahr.), and evaporate until 80 parts only remain; filter again, and add alcohol, 32.) Both these preparations are nearly of the same strength, and contain about one grain of opium to six drops.——*Liquor antimonii opiatus*, Guy's H. (Tincture of opium, ℥j.; solution of tartrate of antimonii and potassa, ℥iv.) Dose, from gutt.xxx. to ʒij., every night.——*Calming looch*, Paris H. (Sydenham's laudanum, gutt.xx. to xxx.; simple looch, ℥v.; orange flower water, ʒij.) A table spoonful every hour.——*Mistura opiata*, New York H. (Tincture of opium, f.ʒij.; water and liquid acetate of ammonia, āā. f.℥iv.)——*Emeto-anodyne mixture*, Paris H. (Sydenham's laudanum and sulphuric ether, āā. ℈j.; mineral kermes, gr.ij.; simple syrup, ℥j.; water, ℥iv.)——*Haustus opiatus*, Guy's H. (Tincture of opium, gutt.xx.; peppermint water, ʒv.; water, ʒiij.)——*Dr. Paris's sedative mixture.* (Tincture of opium, gutt.xv.; syrup of poppy, ʒij.; spirit of cinnamon, ʒj.; water, ℥ss.) For a dose.

Syrupus opii, P. (Opium, 15; water, 64; simple syrup, 4800;) one ounce contains two grains of opium. Dose, from ʒij. to ʒiv. in a mixture.—D. (Watery extract of opium, gr.xviij.; boiling water, ℥viij.; sugar, q. s., to form a syrup; each ounce contains one grain of opium.——*Syrupus opiatus*, Pr., Pol. (Opium, 1; Malaga wine, 13; althæa syrup, 461) ; an ounce contains one grain of opium. Dose, from ℥ss. to ℥j.

Externally. *Enema opii*, New York H. (Infusion of flaxseed, f.℥ij.; tincture of opium, f.ʒj.)—Guy's H. (Tincture of opium, ʒj.; warm water, ℥vj.)—Dr. Paris. (Opium, gr.ij.; mucilage of gum Arabic, ʒiv.; milk, ℥vj.)——*Calming injection*, Paris H. (Sydenham's laudanum, ʒj.; emollient decoction, ℔j.)——*Collyrium opiatum*, P. (Rousseau's laudanum, 7; gum Arabic, 228; rose water, 1152.——*Anodyne collyrium*, Paris H. (Sydenham's laudanum and tincture of saffron, āā. ʒj.; decoction of flaxseed, ℥iv.)——*Linimentum saponis et opii*, *Linimentum anodynum*, U. S. (Castile soap, ℥xij.; opium, ℥j.; camphor, ℥ij.; volatile oil of rosemary, f.ʒij.; alcohol, Cj.—E. (Hard soap, ℥iv.; opium, ℥j.; camphor, ℥ij.; oil of rosemary, ℥ss.; alcohol, ℔ij.—P. (Tincture of opium, 1; medicinal soap, 8; camphor, 4; oil of rosemary, 1; alcohol, 48.)—New York H. (Compound soap liniment, f.℥jss.; tincture of opium, f.℥ss.)—Paris H. (Sydenham's laudanum, ʒj.; soap, ʒss.; olive oil, ℥iv.)——*Opium cerate*, Paris H. (Opium, ʒj.; simple cerate, ℥iv.)——*Emplastrum opii*, L., E. (Opium, ℥ss.; resin, powdered, ℥iij.; lead plaster, ℔j.)——*Emplastrum opiatum*, Pr. (Opium, 2; elemi, mastic, olibanum, āā. 8; benzoin, 4; turpentine, 12; Peruvian balsam, 1.) ——*Anodyne cataplasm*, Paris H. (Opium, ʒj. to ʒij.; flaxseed and barley meals, āā. ℔j.; narcotic decoction, q. s.)

Poppy Heads. *Papaveris capsulæ.* Dry capsules of the white poppy, cultivated in England and France.

P. P. They are ovoid, of the size of a hen's egg, dry; of a yellowish-white; inodorous; of a slightly bitter taste. They contain internally a very large quantity of small white seeds.

C. P. The capsules of the poppy seem to contain, besides a great quantity of mucilage and of vegetable fibres, the same principles as opium, and even morphia itself, but in less proportion. Water and alcohol take up their active principles.

Th. E. They possess virtues similar to those of opium, but in a much milder degree. They are daily used in the form of decoction, as fomentations in painful local affections. The extract prepared from them, though much less active than opium, is of great service in various maladies when the employment of anodynes is indicated; and it has the advantage of relieving pain in an efficacious manner, without, at the same time, producing the effect, called *narcotism*.

D. & M. of Adm. Decoction, No. j. to ij. to water, ℔ij ——*Extractum papaveris*, L., E., P. Gr.iv. to ℈j. in pills.——*Syrupus papaveris*, seu *Diacodium*, P. (Poppy heads freed from the seeds, 1 part; water and sugar, āā. 4 parts.)—L. (Capsules of the poppy, bruised and freed from the seeds, ℥xiv.; sugar, ℔ij.; water, q. s., to form a strong decoction and a syrup.)—E., D. (Poppy heads, freed from the seeds, 1 part; boiling water, 15 parts; sugar, 2 parts); one ounce of this syrup is equivalent to about one grain of opium. Dose, from ʒj. to ℥j.——*Calming mixture*, Paris H. (Diacode syrup, ℥ss.; simple syrup, ℥j.; infusion of balm, ℥iij.; orange flower water, ℥ss.) Dose, a table-spoonful.

Externally. *Decoctum papaveris*, L. (Capsules of white poppy, bruised, ℥iv.; water, 0iv.; boil for a quarter of an hour); in lotions, fomentations, clysters, &c. ——*Sedative fomentations*, Paris H. (Poppy heads, No. ij.; decoction of althea and water, āā. ℔ij.——*Narcotic decoction*, Paris H. (Poppy heads, No. iv.; garden nightshade, ℥ij.; water, ℔ij.)

The petals of the Red Poppy. *Papaver rhœas*, Lin. An annual native plant. The petals are of a fine red colour, of a slight virose smell, and mucilaginous taste. They are frequently employed as emollient, and slightly anodyne, in pulmonary catarrhs, and other inflammatory affections. They may be administered in infusion in the dose of from two to four pinches to ℔ij. of boiling water. A syrup is prepared from them, called *Syrupus rhœados*. *Syrupus papaveris erratici*. L., D., P., Den., A.; given in the dose of from ʒiv. to ℥j. in expectorating mixtures.

Morphia, a proximate principle of an alkaline nature, discovered by Sertuerner, and existing in opium and in the extract of the common poppy, combined, according to Robinet's experiments, with codeic acid.

P. P. This substance is white, in prismatic rectangular needles, inodorous, almost tasteless on account of its difficult insolubility, but very bitter when dissolved. It is unalterable in the air.

C. P. According to Pelletier and Dumas, it is composed of carbon, 72.02; nitrogen, 5.53; hydrogen, 701; and oxygen, 14.84. It is almost insoluble in water; it dissolves slightly in this menstruum when boiling, and completely in alcohol and in ether. Gently heated, morphia melts, and forms on cooling a radiated mass; at a high temperature it is decomposed. It possesses alkaline properties, turns the syrup of violets green, combines with diluted acids, and forms neutral salts. Mixed with nitric acid, it acquires a lively red colour, and the salts of iron in the maximum of oxidation strike a fine blue colour with it.

PREP. Treat an aqueous solution of opium with magnesia or ammonia, which precipitates the morphia, together with the narcotine. Wash the precipitate, first with weak alcohol, in order to separate the narcotine; then with boiling concentrated alcohol dissolve the morphia, which precipitates on cooling.

Many improvements have lately been made in the preparation of morphia; to Dr. E. Staples, of Philadelphia we are indebted for a simple and most productive process for obtaining this valuable principle from the different sorts of opium, which is the following:—

"The preparation of morphia is much facilitated by suspending the colouring matter and other inert substances, at the same time that the morphia is precipitated, as in the following formulæ: one part of opium, in small pieces, is digested in four parts of pure water, for several days, in a temperature of about 70° Fahr.; filter; wash the dregs of opium while on the filter with one part of water several times returned to the dregs; unite the filtered liquor with the washing, and add to the highly coloured transparent solution thus obtained an equal quantity of alcohol, (from four to five parts.) Immediately throw in a slight excess of ammonia, so much attenuated by alcohol that no apparent change takes place. In a few hours morphia will be precipitated in a crystalline form. This method answers very well for the best opium, especially if it is dry.

"For opium of medium quality the following is better adapted: one part of opium to two parts of water; digest for two or three days; then add three parts of distilled vinegar, and permit a further digestion. Filter, and wash the dregs of opium on the filter with one part of distilled vinegar; unite the first filtration with the washing, and add to this coloured transparent acetic solution an equal quantity of alcohol at 35°. Immediately throw in a slight excess of ammonia, so much attenuated by alcohol as not to produce any apparent disturbance. In a few hours the morphia will be precipitated in crystals,

"Impure opium, especially if adulterated by substances very soluble in aqueous or acid menstrua, will require the following treatment to obtain its morphia: digest one part of opium in small pieces, in two parts of pure water; then add four parts of alcohol at 35°, and suffer the digestion to be continued for two or three days longer. Filter, wash the dregs of opium on the filter, with two parts of alcohol at 35°; unite the filtered tincture to the washing, and reduce this strong tincture to one-fourth of its bulk, by distillation in a warm bath. When thus reduced, throw it, while still quite warm, into four parts of pure water. When cold, separate the cold liquor by filtration from the dark precipitate, and add to the transparent liquor an equal quantity of alcohol at 35° (about six parts), and treat it otherwise as in the above processes.

The crystalline precipitates obtained by the above formulæ may be rendered pure by solution in boiling diluted alcohol, or by reprecipitation from an acid solution, sufficient alcohol being added to suspend the small quantity of colouring matter remaining united to the crystals.

"The first precipitates obtained by either of these methods may be converted immediately into sulphate, hydro-chlorate, and other saline compounds of morphia, merely by digestion of the crystals reduced to powder, in warm acidulous menstrua. The powdered crystals should considerably exceed the solvent power of the menstruum, which, when charged with morphia, should be evaporated after having been decanted from the portion of crystals undissolved. A small portion of alcohol added, when the evaporation is nearly finished, favours the production of purer crystals."

The following is a process of M. Blondeau for obtaining morphia by fermentation from opium:—"Take pure opium, and subject it to the action of twice its weight of warm water; to this add the yeast of beer, and suffer the fermentation to proceed until it ceases. Filter through linen, and wash the residuum; mix the liquors, and add to them a sufficiency of ammonia to precipitate the morphia. Collect the precipitate, wash and treat it with water rendered acidulous with hydrochloric acid; filter and evaporate. The hydro-chlorate is procured in a coloured mass, which treat with water and animal charcoal. Decompose this salt with ammonia, and crystals will form of a yellowish colour."

M. Blondeau states that he has obtained from one French pound (7722 troy grains), of the best opium, from thirteen to fourteen French drachms (819 to 822 troy grains), of coloured morphia. Dr. Staples obtained from 7,000 troy grains 1,[illegible] grains of the first precipitate, and 900 grains of the purified morphia.

Th. E. Morphia is capable of exciting a very powerful narcotic influence on the system, without acting, at the same time as a stimulant, like opium. It is therefore preferable, in most instances, to opium, but, on account of its insolubility in water, it is usually administered in the form of sulphate or of acetate of morphia.

Acetate of Morphia. *Morphiæ acetas.* Neutral salt obtained from the combination of acetic acid and morphia.

P. P. White, inodorous, of a very bitter taste, and extremely deliquescent. It crystallizes with difficulty. It may, however, be obtained in crystalline masses formed of needles disposed in divergent rays.

C. P. Very soluble in water; heated to a considerable degree it decomposes, and emits a peculiar and very disagreeable smell; and, treated with diluted sulphuric acid, it produces vapours of acetic acid. It possesses otherwise all the other properties of morphia.

Prep. In order to obtain the acetate crystallized, the acid must be combined directly with the base, and the evaporation performed with a slow heat; in this state it is dried with caution, and reduced to powder.

Th. E. It possesses the same virtues as morphia, but acts with more promptness and energy on account of its solubility. It is now much used in all cases in which opium and its preparations are indicated.

D. & M. of Adm. Gr.¼ to gr.ij. or iij. in 24 hours, in pills, mixture, &c.—*Solution of acetate of morphia*, F. M. (Acetate of morphia, 1; distilled water, [illegible] alcohol, 5; acetic acid, a few drops; ʒss. contains gr.j. of acetate.) Dose, from gutt.vj. to xxiv.——*Syrup of morphia*, F. M. (Acetate of morphia, 1; simple syrup, 1304; ℥j. contains gr.¼ of acetate.) Dose, from cochl. min. j. to ij. every three hours, or ℥j. in a mixture.

Sulphate of Morphia. *Morphiæ sulphas.* Neutral saline substance, resulting from the combination of diluted sulphuric acid with morphia.

P. P. It is white, crystallizes in needles, forming silky flakes; it is inodorous, of a very bitter taste, and unalterable in the air.

C. P. It is composed of 100 of morphia and 12.46 of sulphuric acid, besides the water of crystallization. It dissolves in twice its weight of boiling distilled water. It is easily decomposed by the action of fire, and acquires a violet-red colour. It is capable of combining with a small additional quantity of acid, which forms a very soluble bi-sulphate.

INCOMP. SUBST. Most metallic oxides.

PREP. Treat directly the morphia with diluted sulphuric acid and permit the liquor to crystallize.

TH. E. The same as that of the acetate, to which it is now generally preferred on account of its composition not being liable to vary.

D. & M. OF ADM. Gr.¼ to j. in pills, or in a mixture.——*Syrup of sulphate of morphia*, F. M. (Sulphate of morphia, 1; syrup, 2304; ℥j. contains gr.¼ of sulphate.) Dose, from ℥ss. to ℥j.

CITRATE OF MORPHIA. *Morphiæ citras*, the use of which has been recommended by Dr. Porter, an American physician, and which he was far from using in a pure state, in the way he prepared it, by treating opium with citric acid, by simple maceration, and has not been until now studied with any degree of interest. Dr. Porter, as well as several American practitioners, believe that this compound acts more speedily and powerfully, but not in so permanent a manner as opium. Dr. Magendie, in the last edition of his formulary, proposes to combine directly morphia with citric acid, in order to form a *solution of citrate of morphia*, or *Pink drops* (morphia, 2; crystallized citric acid, 1; distilled water, 72; tincture of cochineal, 18), of which preparation, from six to eighteen drops may be administered in the course of one day.

The HYDRO-CHLORATE and NITRATE of MORPHIA are likewise very soluble and bitter. They have not been yet employed, but it would be worth while to try them.

NARCOTINE, or DEROSNE'S SALT, a proximate principle contained in opium; it is white, in silky needles, insipid, and inodorous. It is neither acid nor alkaline, and does not form salts with acids, which, as well as the oils and ethers, dissolve it simply. It is, on the contrary, almost insoluble in water, and requires 100 of cold alcohol, and 24 of this menstruum, when boiling, to dissolve it. According to Dr. Bally's experiments, this substance has little action on the economy; Orfila, on the contrary, believes that it exercises a stupifying and deleterious influence, whilst Dr. Magendie thinks it acts as a powerful excitant. Notwithstanding these various and contradictory opinions, narcotine is not used as a remedy.

Blood Root. Puccoon. *Sanguinaria canadensis*, Lin. A perennial plant peculiar to North America.

P. U. The root and seeds.

B. C. Scape uniflore, proceeding from one end of the root, rising perpendicularly to the height of six to eight inches; one solitary leaf, radical, reniform, and lobed, attaining its full growth only after the blossoming of the plant; calix two-leaved, deciduous; petals eight; stigma sessile, two-grooved; capsule superior, oblong, one-celled, two-valved; apex attenuated,; receptacles two, filiform, marginal; seeds small, round, and black.

P. P. Root tuberous, of the size of the finger, two or three inches long, with a curvature at each end; several roots connected together by numerous fasciculate fibres originating from the main body; brown externally; when cut, a juice of a reddish-orange colour is abundantly discharged through numerous pores. The dried root is wrinkled, having considerably diminished in size; its fracture is resinous and of a deep red colour. Its taste is bitter, acrid, and pungent, leaving an impression in the fauces for some time after it has been chewed.

C. P. According to Dr. Fitzgerald Bird's analysis, it appears to contain cinchonia, extractive matter, a gum resin, a resin and gallic acid in a state of combination. The colouring principle of this root resides chiefly in its resinous parts, the alcoholic solution being always more than twice as highly coloured as the aqueous. Dr. Dana, of New York, obtained from it a peculiar alkaline substance, which has been called *sanguinara*.

Th. E. The American physicians attribute various properties to this plant; namely, narcotic, tonic, stimulant, expectorant, emetic, &c., according to the dose in which it is administered. It is employed in diseases of the lungs, hydrothorax, rheumatic affections, &c. The dose is from five grains to twenty.

The powdered root has been found beneficial in ill-conditioned ulcers with callous edges, and as an escharotic.

Sanguinara, according to Dr. Dana, is uncrystallizable, of a fine yellowish-red colour, forming coloured salts with acids.

Prep. It is obtained by digesting the bruised root of sanguinaria in a limited portion of cold water slightly acidulated with sulphuric acid, and repeating the digestion in a similar quantity of water, still less acidulated. After uniting the liquors, they are filtered, and a sufficient quantity of liquid ammonia is added. The precipitate formed is separated, washed with water slightly charged with ammonia, and afterwards digested in alcohol. All the soluble portion of the precipitate is then concentrated by distillation or evaporation, and thrown into pure water, in which the sanguinara precipitates.

Dr. Staples, who repeated the above process of Dr. Dana, found it to yield a very small proportion of sanguinara; but by the following one, he obtained a much larger and more satisfactory product:—Digest the sanguinara in alcohol, as long as its peculiar colour is given to the menstruum; filter and throw in sub-acetate of lead; separate the copious precipitate by filtration, and pass through the clear tincture a current of hydro-sulphuric acid gas; remove the alcohol by distillation, and precipitate with ammonia. From this precipitate, digested in a weak solution of sulphuric acid, Dr. S. obtained a crystallized *sulphate of sanguinara*, of a beautiful orange colour.

Dr. Tully, who gave the formula of Dr. Dana, for the preparation of sanguinara, does not mention whether this principle has ever been used in the practice of medicine.

Family Solaneæ.

Belladonna. Deadly Nightshade. *Belladonnæ herba. Atropa belladonna*, Lin. A perennial plant; growing in shady places, along old walls and rubbish, and flowering from June to August.

P. U. The whole plant.

B. C. Stem herbaceous, straight, ramose, cylindrical, hairy, from two to three feet high; leaves oval, acute, large, of a deep green colour; flowers large, of a tarnished red, solitary, hanging and axillary; calix with five deep and acute divisions; corolla subcampanulate, three stamina, with ovoid anthers; fruit, a round bi-celled berry, green at first, then red, and lastly almost black.

P. P. All the parts of this plant possess a virose smell, and a nauseous and slightly acrid taste.

C. P. According to Brande, it contains a bi-malate of *atropia*, 1.51; gum, 8.33; starch, 1,25; resinous chlorophyllin, 5.84; lignin, 13.7; a matter analogous to osmazome, some salts, &c. Water and alcohol take up its active principles.

Atropia, the active principle of belladonna, is an alkaloid substance, white, shining, crystallizing in long needles, tasteless, inodorous, insoluble in cold water or alcohol, slightly soluble in these menstrua when warm, and capable of combining with acids, and forming crystallizable bi-salts. It has not yet been exhibited alone, but it seems, according to Dr. Runge's experiments, to possess the same virtues as belladonna.

Th. E. In large doses, belladonna acts like the narcotico-acrid poisons, and quickly causes death. In small doses it irritates the stomach, and after having been absorbed, it produces heaviness of the head, vertigo, dilatation of the pupils, irregularity of the pulse, sweats, &c., which effects are followed with prostration of strength and a state of somnolency, which is of a shorter or longer duration.

The employment of this substance has been highly recommended in the treatment of hooping-cough, in convulsive coughs, in tic douloureux of the face, and in other nervous affections; in dropsy, icterus, &c. Several German physicians assert, that it may be used as a preservative against scarlatina, and have published several observations on epidemics of this disease, during which children, who were in the habit of making use of this substance, communicated daily with those who were suffering under it, without, however, being affected by it; but before crediting this incomprehensible property, it would be well to obtain a much greater mass of facts than we now possess. Dr. W. Chevallier, has used it successfully as an external application in certain acute and chronic inflammations of the skin, in white swelling of the articulations, rheumatic affections, &c. Finally, it has been usefully employed to dilate the iris, in consequence of the action it exercises upon the contraction of the pupil, especially after the operation for cataract. Several surgeons exhibit it as a poultice over the eye, in order to obtain a dilatation of the pupil previously to performing the operation; and Dr. Chaussieur has recommended its exhibition to obtain the relaxation of the neck of the uterus, in cases of spasmodic rigidity of this organ when it becomes an obstacle to delivery.

D. & M. of Adm. *Powder*, gr.j. to xij. in pills. *Infusion*, ℈j. in ℥viij. of boiling water, of which ℥j. to ℥ij. are given daily.——*Extractum belladonnæ*, L., A., P., U. S., Den., Pol., Pr., B. Dose, from gr.½ to iv. in pills.

Externally. *Enema of belladonna*, Paris H. (Belladonna leaves, gr.xij.; boiling water, ℥vj.)——*Belladonna salve*, Paris H. (Extract of Belladonna, ʒij.; distilled water and axungia, āā. ℥ij.)——*Belladonna ointment*, W. Chevallier. (Extract of belladonna and simple cerate, āā. p. e.)

Mandrake Root. *Atropa mandragora*, Lin. A plant nearly related to the preceding, and possessed of the same properties. It was formerly used in a great number of diseases; it is now exhibited externally only, and that very seldom, as a poultice to scirrhous tumours.

Stramonium. Thorn-apple. Jamestown-weed. *Stramonii herba*. *Datura stramonium*, Lin. An annual plant growing abundantly in uncultivated places all over the United

States of America, and now naturalized in this country; it is thought to be a native of South America, or Asia. It blossoms in June.

P. U. The whole plant.

B. C. Stem herbaceous, cylindrical, ramose, from two to four feet high; leaves large, oval, sinuate and petiolated; flowers white, very large, solitary; calix tubular, elongate, caducous, marked with five prominent ribs; corolla very large, infundibuliform, tube five-angular, ovary pyramidal, with four polyspermous cells; stigma, horse-shoe like; fruit, an ovoid capsule, furnished with thorns, containing some brown, reniform, and rough seeds.

P. P. Its smell is virose and nauseous, and its taste acrid and bitter.

C. P. Promnitz found the green plant to contain, gummous extractive matter, 0.58; extractive, 0.6; fecula, 0.64; albumen, 0.15; resin, 0.12; salts, 0.23; lignous fibres, 3.15. Mr. Brande, in his analysis of the seeds, discovered an alkaloid proximate principle, combined with malic acid, which he named *daturia*. Water and alcohol take up, by ebullition, the proximate principles of this plant.

Daturia, which, according to Messrs. Kirchoff and Engelbart, seems to be the active principle of stramonium, is white, pulverulent; almost insoluble in cold water and alcohol, but soluble in the latter menstruum when boiling, and capable of combining with acids, and forming soluble salts. It has not yet been used in medicine.

Th. E. The action of stramonium upon the animal economy, is similar to that of belladonna. It has been recommended as an antispasmodic, in the treatment of convulsions, neuralgiæ, rheumatism, &c.; but it is seldom used at present. It is rather an uncertain and dangerous remedy.

D. & M. of Adm. Gr.j. to xx. gradually.——*Extractum stramonii*, F., R. *Extract*, Paris H. Dose, from gr.j. to iv. in pills.

Externally. Decoction, in lotions, fomentations, &c.——*Tinctura stromanii* U. S. (Bruised seeds of stramonium, ℥ij.; diluted alcohol, 0j.)

Tobacco. *Nicotianæ folia. Nicotiana tabacum*, Lin. A plant indigenous to America, and cultivated in many parts of Europe.

P. U. The leaves.

B. C. Stem straight, ramose, and viscous, from two to three feet high; leaves alternate, pubescent, very large, oval, and sessile; flowers in panicles at the extremity of the branches, large; calix urceolate; corolla, infundibuliform, regular, five stamina; ovary ovoid, with two polyspermous cells; fruit, an ovoid and bivalve capsule.

P. P. The tobacco leaves, in their green state, have a virose smell and an acrid aromatic taste. As they are found in commerce, they are dry and have experienced slight degrees of fermentation, which, to a certain extent, changes their nature; their colour is then more or less brown, their odour aromatic and penetrating, and their taste acrid.

C. P. According to Vauquelin, the juice obtained from the fresh leaves contains a red animal matter, soluble in water and alcohol; a peculiar acrid principle, soluble in water and alcohol, volatile, colourless, and apparently the active principle; a green resin, albumen, lignous fibres, acetic acid and some salts. The tobacco of commerce contains besides some carbonate of ammonia. Water and alcohol take up easily its active principles.

Th. E. Administered internally, tobacco irritates powerfully the surface of the stomach, and produces nausea, vomiting, and even bloody evacuations. Its absorption is followed by heaviness of the head, tremor, somnolency, and other phenomena resulting from its powerful narcotic action on the nervous system. It is capable of inducing the acceleration of the pulse, profuse sweats, increase of the secretion of urine; and, finally, in large doses, it acts in the same violent manner as the narcotico-acrid poisons.

The use of tobacco, as an errhine and a masticatory is too generally known to require being mentioned in this place. Some physicians have exhibited it as an emetic, but this mode of exhibiting it, is not without danger. Several preparations of tobacco are used in chronic catarrhs in individuals of a lymphatic temperament. It is likewise recommended in dropsy. Injections of tobacco are often administered with success in cases of asphyxia, in strangulated hernia, or to destroy ascarides.

Finally, it is administered externally in psora, scald head, &c. and good results have been obtained from its employment in fomentations, in cases of dysentery; and it appears that in the West India Islands they have succeeded in curing tetanus by means of baths prepared with a decoction of fresh tobacco leaves. An empyreumatic oil of tobacco, has, for several years past, been used by American practitioners, as an external application, mixed with ointments, in indolent tumours, &c. This oil possesses very energetic narcotic effects, and is said to be a virulent poison.

D. & M. of Adm. *Internally. Infusion*, ʒj. to ʒij. in boiling water, ℥vj. for two doses, as an emetic, very seldom used.——*Infusum nicotianæ Fowleri*, B. (Virginia tobacco, ℥j.; boiling water, ℥xij.; alcohol, ℥ij.) Dose, from gutt.xxx. to lx. twice a day.——*Vinum nicotianæ tabaci*, E. (Tobacco, 1; Spanish wine, 12.) Dose, from gutt.x. to xxx. in a proper menstruum.——*Extractum nicotianæ*, F. Dose, from gr.j. to gr.iv.

Externally. *Infusum tabaci*, L. (Tobacco, 1; boiling water, 128.) *In injections*. *Enema of tobacco*, Paris H. (Tobacco, ℥j.; boiling water, ℔ij.; tartar emetic, gr.xij.——*Fomentation*, Paris H. (Tobacco, ℥ij.; boiling water, ℔j.)——*Oil of tobacco*, P. (Tobacco, 1; olive oil, 2.)——*Ceratum tabacinum*, B. (Expressed juice of tobacco and wax, āā. 2; resin, 1; oil of myrrh, q. s.) In frictions upon slightly inflammatory tetters.—— *Epithem of tobacco*, Dr. Paris. (Tobacco leaves, ℥j.; water, q. s.) To be applied on the epigastrium as an emetic.

Henbane. *Hyosciami herba et semina*. *Hyosciamus niger*, Lin. An annual indigenous plant, very common in uncultivated places.

P. U. The whole plant and seeds.

B. C. Stem ramose, hairy, from one to two feet high; leaves alternate, large, oval, deeply sinuate on the borders, hairy, and viscous; flowers yellowish, with streaks of a vinous red, almost sessile, in unilateral spikes; calix tubular, subcampanulate; corolla infundibuliform; stamina inclined; fruit, an elongated and bilocular capsule, opening at the summit, and containing tubercular seeds.

P. P. The colour of this plant, when fresh, is of a dull green; its odour is fetid and nauseous, and its taste sweetish, afterwards slightly acrid.

C. P. Henbane contains resin, mucilage, extractive, malic acid, and some salts, Mr. Brande, in his analysis of the seeds, has discovered an alkaloid proximate principle, combined with malic acid, which has been called *hyosciama*, and is considered to be the active principle of this plant.

Hyosciama is white, it crystallizes in long prisms, unalterable at a high temperature, insoluble in water, and forming soluble salts with sulphuric and nitric acids. It has not yet been employed in practice, but ought to be carefully studied, as deserving very particular attention.

Th. E. In large doses, hyosciamus acts like the substances we have just noticed, that is, like narcotico-acrid poisons. In smaller doses, its action is particularly felt by the brain, and it produces cephalalgia, vertigo, hallucinations, a sort of merry intoxication; sometimes somnolency, at other times, on the contrary, it produces very great agitation. Should this excitation be carried so far as to produce cerebral congestion, a new series of symptoms is then experienced, such as numbness of the limbs, prostration of strength, irregularity in the pulse, &c. According to Drs. Fouquier and Ratier, this remedy does not induce sleep, and its virtues have been too highly spoken of. They assert to having administered it under different forms, in very considerable doses, and that it produced only very slight effects. However, it has been recommended in the treatment of neuralgia, epilepsy, hypochondria, nervous coughs, colica pictonum, tremor of the limbs, &c. Externally, henbane leaves are applied as a poultice to cancerous tumours, in order to soothe the pain; they are used in lotions, fomentations, baths, &c.

D. & M. OF ADM. *Internally.* *Powder*, seldom, gr.j. to ℈j.——*Emulsio seminum hyosciami*, B. (Henbane seeds, 1; bitter almonds, 6; water, q. s.) Dose, cochl. j., every two hours.——*Extractum hyosciami*, L., E., D., P., PR., POL., DEN., F., R., B. Dose, from gr.j. to ℈j. in pills.——*Alcoholic extract*, PARIS H.——*Dr. Paris's hyosciamus pills.* (Extract of henbane, ℈j.; camphor, gr.viij.; for twelve pills.) Dosc, No. iij. every night.——*Tinctura hyosciami*, L., E., D., U. S. (Henbane, 1; alcohol, 8.)—PR., POL. (Henbane, 1; alcohol, 4; distilled water, 2.) Dose, from ʒss. to ʒj.

Externally. *Poultices.* *Decoction*, in baths, lotions, fomentations.——*Lotio hyosciami*, GUY'S H. (Extract of hyosciamus, ʒj.; water, ℥iij.)——*Anodyne and resolvent liniment*, PARIS H. (Extract of hyosciamus, ʒss.; medicinal soap, ʒij., lilly oil, ℥iv.)——*Oleum coctum hyosciami*, P., POL., PR. (Henbane, 1; olive oil, 2.)——*Emplastrum hyosciami*, PR., POL., B. (Hyosciamus and wax, āā. 2; resin and olive oil, āā. 1.)

WHITE AND YELLOW-HENBANE. *Hyosciamus albus* and *H. aureus*, Lin, have the same properties as the preceding, but they act with less energy. M. Chevallier prepares a *syrup of white-henbane*, (dry extract of white-henbane, 1; simple syrup, 576; every ounce contains one gr. of extract hyosciamus), of which from ℥ss. to j. may be administered at once.

Family Synanthereæ.

Chicoraceæ.

STRONG-SCENTED LETTUCE. *Lactucæ virosæ herba.* *Lactuca virosa*, Lin. A biennial indigenous plant, growing on the sides of roads, and flowering in July.

P. U. The whole plant.

B. C. Stem glaucous, straight, ramose at top, from three to four feet high, leaves semi-amplexicaule, with thorny nerves underneath; flowers yellow, in terminal panicles; involucre cylindrical, imbricate; receptacle naked, plane; florets hermaphrodite; fruit compressed, and furnished with a silky pappus.

P. P. The whole plant contains a very abundant milky juice, and possesses a virose and disagreeable smell, and an acrid, bitter taste.

C. P. The strong-scented lettuce contains a bitter principle, a peculiar acid, analogous to oxalic acid, resin, caoutchouc, wax, gum, albumen, and salts.

TH. E. This plant acts on the nervous system in a manner similar to hyosciamus and the other solaneæ; this is the reason why it may be substituted in many cases for opium. In sufficiently large doses, it produces nausea, alvine evacuations, and often, especially in cases of œdema or dropsy, a remarkable increase in the secretion of urine. It has been exhibited with success in ascites, engorgements of the abdominal viscera, jaundice, &c., and as a substitute for opium in neuroses.

D. & M. OF ADM. *Extract*, P. *Succus spissatus luctucæ virosæ*, E.—*Extractum luctucæ virosæ*, R. Dose, from gr.ij. to ℈j., and even ʒj., in pills.

THRIDACE. *Thridax* seu *lactucarium*. Juice furnished during the time of fructification by the GARDEN LETTUCE, *Lactuca sativa*, Lin. An annual plant, cultivated in our gardens.

B. C. Leaves oval, entire, very large; flowers yellow, smaller than those of the preceding.

P. P. Thridace is in the form of dry extract, attracting powerfully the moisture of the air, of a brown colour, of a taste and odour resembling those of opium.

C. P. According to Schrader's analysis, this substance contains a peculiar resin, 34.2; a bitter principle, 36.3; gum, 3.5; vegetable fibres and salts, 26. M. Caventou has experimented upon thridace, and found no principle analogous to morphia, but some malic acid, lime, &c.

PREP. Incisions are made in the stem of the lettuce, with a silver blade; the milky juice then exudes rapidly and concretes. The stem is afterwards cut in pieces, and pounded in a marble mortar, and the juice expressed from it, then evaporated to the consistence of an extract, and mixed with the first product.

TH. E. Thridace, which was first used by Dr. Coxe, of Philadelphia, and afterwards by Dr. Duncan, under the name of *lactucarium*, as a substitute for opium, has been of late employed and studied by Dr. Francois. From the observations of this distinguished physician, this remedy seems to act by diminishing the frequency of the pulse and animal heat. It possesses, in a remarkable degree, the property of producing sleep, without ever causing narcotism, or acting as a stimulant, as opium does. It may consequently be administered in cases of acute inflammation. Dr. Francois has exhibited it in a number of cases as a promoter of sleep, and he asserts that he has obtained from its employment the most happy effects.

D. & M. OF ADM. Gr.ij to iv., and gradually to x. and even xv., in pills.

Family Scrophulariæ.

PURPLE DIGITALIS. FOX GLOVE. *Digitalis folia*. *Digitalis purpurea*, Lin. A biennial indigenous plant, growing on the sides of hills and roads, and flowering in June and July.

P. U. The leaves.

B. C. Stem herbaceous, simple, straight, hairy, from two to three feet high; radical leaves very large, oval; whitish, hairy on both sides; flowers of a deep purple, hanging in a terminal and unilateral spike; calix persistent, with five deep divisions; corolla irregular, campanulate, spotted internally with black dots; fruit, an ovoid, acuminate and bivalve capsule.

P. P. The leaves of this plant have a slight virose smell, and an acrid, unpleasant taste.

C. P. According to the analysis of Messrs. Destouches and Bidault de Villiers, digitalis contains an aqueous brown extract, an alcoholic extract, an oily green matter, salts, oxide of iron, &c. M. Leroyer, of Geneva, has discovered in it a peculiar substance which he considers as the active principle of this plant, and which he calls *Digitaline;* but, according to M. Dulong, this substance is not of an alkaline nature, but is simply a compound of several other substances, all soluble in ether.

DIGITALINE, such as M. Leroyer obtained it, is brown, of the consistence of pitch, extremely deliquescent, slightly alkaline, of an intense bitterness, and almost uncrystallizable. This substance, whatever its nature may be, possesses in the highest degree the virtues of digitalis, as has been proved by the experiments of Dr. Prevost, made upon several species of animals. It has not been used as a medicine.

INCOMP. SUBST. Sulphate of iron, infusion of bark and acetate of lead.

TH. E. In large doses, digitalis irritates powerfully the gastro-intestinal surface and produces nausea, vomiting, and very abundant alvine evacuations. Its action is afterwards spent on the nervous system, producing vertigo, dimness of sight, delirium, convulsions or a general debility, and, finally, death. When administered in small doses, nausea and slight colics are the only effects observed, and it does not always impair the appetite. As to its general effects, they manifest themselves by a considerable increase of the urinary secretion, and by an acceleration of the circulation, which are soon followed by a more or less considerable diminution of the pulse, &c.; and should its employment be continued in the same dose, the patient falls by degrees into a profound prostration, and experiences incessant nausea, heaviness in the head, and considerable muscular debility. Administered in small doses, and continued for some time, digitalis may, occasionally, increase, at first, the number of arterial pulsations; but in general, it diminishes it gradually. We have observed instances in which the pulse under its influence was reduced from seventy pulsations per minute to thirty, and this sedative action often continues for some time after its exhibition has been stopped. Most authors still ascribe to digitalis the power of diminishing morbid secretions, and of rendering absorption more active.

Digitalis is a remedy of frequent employment. It is principally administered as an anodyne in nervous palpitations, hemoptysis, asthma, nervous coughs, and in the last stage of pulmonary catarrhs. In anasarca and dropsy, benefit has been obtained from its powerful diuretic action, and in consequence of the influence it appears to have on absorption. It has likewise been recommended in scrofulous diseases. Finally, the Italian physicians consider it as a valuable contra-stimulant, and they exhibit it in large doses in inflammatory diseases, especially in acute peripneumonia. The favourable effects obtained from its employment in these cases is probably owing to the diminution of the activity of the circulation which it produces.

D. & M. OF ADM. Powder, gr.ij. to xij., and gradually ℈j.; even ʒss., in pills. Infusion, ʒj. to ʒiij. to two pounds of boiling water.——*Infusum digitalis*, L., E., U. S. (Digitalis, 1; alcohol of cinnamon, 8; boiling water, 64.) Dose, ℥ss. to ℥j.——*Decoctum digitalis*, D. (Digitalis, 1; water, 80;) same doses.——*Tinctura digitalis*, L., E., D., A., P., U. S. (Digitalis, 1; alcohol, 8.)—POL., F., PR. (Digitalis, 1; alcohol, 4; distilled water, 2.) Gutt.x. to ℈j. and more in a mixture. ——*Tinctura digitalis ætherea*, P., POL. (Digitalis, 1; sulphuric ether, 8.) Gutt. x. to xx.——*Diuretic mixture*, PARIS H. (Tincture of digitalis, ʒj.; infusion of tea, ℥iv.; oxymel of squills, ℥j.)

Externally. Decoction, in injections, fomentations, lotions.——*Fomentum digitalis*, GUY'S H. (Digitalis, ℥j.; boiling water, ℔ij.)

Family Umbelliferea.

HEMLOCK. *Cicutæ majoris herba. Conium maculatum*, Lin. A biennial indigenous plant, growing in low and damp places, and flowering in June and July.

P. U. The whole plant.

B. C. Stem herbaceous, branchy, smooth, spotted with blackish dots, and from three to six feet high; leaves alternate, tri-pinnate, very large, deeply dentated; flowers white, small, in terminal umbels, composed of from ten to twelve rays; involucre with three or five leaflets; involucellum with three unilateral leaflets; petals cordiform; fruit gibbous, didymous.

P. P. The smell of the fresh plant, when rubbed with the fingers, is unpleasant, and not dissimilar to that of the urine of the cat; its taste is acrid and nauseous.

C. P. According to Mr. Brande, this plant contains a peculiar alkaloid substance, which he calls *Coniin*, a very odorous oil, albumen, resin, a colouring matter, and some salts. Ether and alcohol take up its active principles, whilst water dissolves but a small part.

INCOMP. SUBST. The acids considerably diminish the energy of cicuta.

TH. E. Hemlock irritates powerfully the parts with which it comes in contact, and in large doses it acts like the narcotico-acrid poisons. When absorbed, its action is principally spent on the brain, and it exercises, at times, a considerable sedative influence; at other times, on the contrary, it produces cephalalgia, vertigo, agitation, delirium, somnolency, and death, which seems to be preceded by cerebral congestion. In small doses, its modus operandi is nearly related to that of belladonna. It is used as a sedative in the treatment of several nervous affections, priapism, obstinate coughs, &c. It has likewise been highly recommended in cases of engorgement of the mammæ, and even in scirrhous and cancerous affections, the shooting pains of which it alleviates. It is capable of being really useful, either internally or externally, in the treatment of certain chronic engorgements of the viscera.

D. & M. OF ADM. Powder, gr.ij. to ℈j. in pills.——*Infusum conii*, GUY'S H. (Cicuta and coriander, āā. ʒij.; boiling water, ℥viij) Dose, ℥j. to ℥ij., two or three times a day.——*Extractum conii*, L., E., D., A., P., U. S., POL., PR., B., DEN. Dose, from gr.ij. to ℈ij. in pills.——*Extract prepared without fecula*, P. Dose, from gr.j. to xv.——*Depurative pills*, PARIS H. (Extract of hemlock, ʒss.; opium, gr.xviij.; calomel, ʒss.; simple syrup, q. s., for 32 pills.) No. ij. to vj ——*Stoerck's cicuta pills*, Dr. PARIS. (Hemlock extract, ʒj.; hemlock leaves pulverized, q. s., for two grain pills.) No. j. to iv. twice a day.——*Mixture of the extract of cicuta*, Dr. PARIS. (Extract of cicuta and of hyosciamus, āā. gr.v; mucilage of gum Arabic, ʒij.; liquid acetate of ammonia and water, āā. ℥ss.; red poppy syrup, ʒj.) To take every four hours.——*Mistura conii composita*, GUY'S H. (Extract of cicuta, ʒj.; sub-carbonate of soda, ʒjss.; tincture of red pepper, ʒvj.; decoction of liquorice root, ʒxi.) Dose, ʒj. to ʒij., three or four times a day.

Externally. Calming fomentations, Dr. PARIS. (Hemlock, ℥j.; boiling water, ℔ijss.)——*Fomentum conii compositum*, GUY'S H. (Hemlock, ʒij.; Roman camomile, ℥ss.; water, ℥ij.)——*Hemlock poultice*, Dr. PARIS. (Hemlock, ʒij.; crumb of bread, ℥vj.; water, ℔jss.)——*Emplastrum cicutæ cum-ammoniaco*, P., R. (Hemlock, 500; hemlock oil, 32; gum ammoniac, 125; resin, 240; wax, 160; white resin, 112.)——*Emplastrum conii*, A., B., PR., POL. (Hemlock, wax, and resin, āā. 2; olive oil, 1.)——*Oleum cicutæ coctum*, P. (Hemlock leaves, 1; olive oil, 2.), in frictions.

CONIIN possesses the following properties, by which it may be distinguished: 1st. In contact with tincture of iodine, its solution gives rise to a reddish precipitate. 2d. Tincture of galls renders its solution brown, but causes no precipitate. 3d. It precipitates the solutions of the sulphate of mercury and muriate of zinc of a dirty yellow colour. 4th. It occasions a slight turbidness in the solutions of the carbonates of potassa and soda. 5th. It communicates a brown colour to the muriate of platinum. 6th. With the nitrates of silver and baryta, the acetates of baryta and lead, the muriate of lime, and lime-water, it yields to grayish-white precipitates.

According to Mr. Brande, this substance is obtained by digesting the leaves and stem of the fresh plant, well bruised, for several days, in alcohol; filter the solution, and evaporate to dryness; treat the alcoholic extract with water, and add to the aqueous solution obtained, either magnesia, alumina, or the oxide of lead; evaporate this solution to dryness, and treat the dry residue with a mixture of alcohol and ether. This menstruum takes up coniin, which, by a new evaporation to dryness, is left in a pure state.

Half a grain of coniin is sufficient to kill a rabbit. The symptoms induced by it are analogous to those produced by strychnia. After death, the vessels of the head, the right auricle of the heart, the superior vena cava, and the jugular, are very much gorged with blood, while the abdominal vessels appear to be completely empty.

WATER-HEMLOCK. COW-BANE. *Cicuta virosa*, Lin., and the SMALL CICUTA, *Æthusa cynapium*, Lin., plants nearly related to the preceding, and which act on the economy nearly in a similar manner as hemlock. These plants were once employed, but they are now almost out of use.

Family Renonculaceæ.

ACONITE. LARGE BLUE WOLFSBANE. MONKHOOD. *Aconiti herba. Aconitum napellus*, Lin. A perennial plant, native of the mountains of Germany and Switzerland, and flowering in the month of June. It is cultivated as an ornament to our gardens and shrubberies.

P. U. The leaves and root.

B. C. Stem herbaceous, straight, simple, from three to four feet high; leaves alternate, petiolate, seven-lobed, cut in narrow slips; flowers blue, large, in a terminal spike; calix petaloid, with five unequal divisions, the superior helmet-formed; corolla, two irregular and unguiculate petals; about thirty stamina; three pistils; ovary, with a polyspermous cell; fruit, formed of three elongate capsules opening externally.

P. P. The root of aconite is napiform, blackish externally, and white internally. Its smell, as well as that of the whole plant, and especially of the leaves, is feeble, but nauseous; its taste is acrid and bitter; it leaves in the mouth a sensation of heat and pungency, and a sort of numbness.

C. P. According to M. Pallas's analysis, this plant contains an alkaloid substance, already described by M. Brande, and called *aconita*, a black oily matter, a green matter, analogous to that of Peruvian bark, albumen, malate, muriate, and sulphate of lime, starch and lignin. Water and alcohol take up the active principles of this plant.

Aconita, which, according to M. Pallas, is the active principle of the plant we are just treating of, has not been until now carefully investigated; we only know that it is obtained in the form of yellow scales, transparent, of a very bitter taste; soluble in water, hardly soluble in cold alcohol, and slightly alkaline.

Th. E. Aconite, in large doses, proves a very energetic narcotico-acrid poison. Its action is more especially felt by the nervous system and the brain. It produces a sort of mental hallucination, a violent inflammation of the digestive organs, and death. In small does this substance seems to increase the frequency of the pulse, and the activity of the renal and cutaneous secretions. It has been exhibited with advantage in chronic rheumatism, gout, constitutional syphilis, palsy, amaurosis, and cancerous affections. Dr. Fouquier, to whom we are indebted for a number of experiments on the action of aconite, observes that it possesses a considerable diuretic property, and he has exhibited it with success in cases of dropsy.

D. & M. of Adm. *Powder*. Gr.ij. to ʒss. gradually, in pills.——*Extractum aconiti*, L., E., P., U. S., Den., Pr., Pol., A., B., R. Dose, from gr.j. to ℈. gradually in pills.——*Tinctura aconiti*, Pr., Pol. (Aconite, 1; alcohol, 4). Dose, from gutt.x. to ℈j. in a mixture.

Several other species of this genus, such as *Aconitum anthora*, *A. cammarum*, and *A. lycoctonum*, Lin., seem to possess exactly the same properties as the above plant we have already mentioned, and would be good substitutes for it if it were necessary.

Family Rosaceæ.

Wild Cherry Tree. *Prunus virginianus*, Lin. One of the large trees of the North American forests.

P. U. The bark of the trunk and root.

B. C. Trunk from twenty-five to thirty feet high; leaves deciduous, oval, pointed, and dentate, of a fine shining green colour, furnished at their base with two small reddish glands; flowers white, in erect racemes, from six to eight inches long; calix inferior, five-cleft; five petals; style terminal; fruit, a black drupe, containing a nut with a prominent suture.

P. P. It has a bitter astringent taste, slightly aromatic, similar to that of the peach kernels.

C. P. Dr. Conwell, in his dissertation on vegetable chemistry, mentions that he has obtained from this bark a new crystalline principle, which he calls *cerasia*.

Th. E. The remedial properties of this bark seem principally to depend upon the quantity of prussic acid it contains. When exhibited internally and absorbed, it causes a slight acceleration in the circulation, and induces in some individuals a soporific state. Taken for some time, and in moderate doses, it acts as a tonic on the stomach, and therefore the whole economy is invigorated by it. Exhibited frequently, and in large doses, it irritates the digestive organs, and acts as a sedative on the action of the heart and the circulation generally. This bark has been particularly recommended in intermittent fevers, phthisis, hectic fever, and in some instances with decided benefit. Its effects are pretty obvious, and we may easily perceive how this bark may produce this beneficial medication in cases of this nature. Its effects on phthisical patients are, in every respect, like those of the prussic acid. It is also used with advantage in chronic hysteria, and, finally, in asthma. A decoction of this bark has proved of great advantage when applied as a wash to irritable and fungous ulcers.

The bark of the root is stronger than that of the trunk. The cherries have been advantageously used, as a domestic remedy, in scurvy and dysentery.

D. & M. of Adm. *Powder*, from ʒss. to ʒij. The decoction does not appear to possess much strength; the prussic acid, which appears to be its most important part, is driven off by boiling. The cold infusion, however, is an excellent preparation; ℥j. of the bark is to be infused in a pint of cold water, for twenty-four hours, and taken by wine-glassfuls every four hours.

Cherry Laurel. *Lauro-cerasi folia. Cerasus lauro-cerasus*, Willd. A shrub, growing on the shores of the Black Sea, naturalized in the south of Europe, and cultivated in gardens.

B. C. Trunk smooth, blackish, from fifteen to twenty-five feet high; leaves persistent, evergreen, elongate, entire, shining; flowers in axillary spikes, white, possessing a strong smell of bitter almonds; fruit, ovoid and blackish drupes, resembling the cherry called the black-heart.

P. P. The leaves, flowers, and almonds of the cherry laurel have a very strong smell of prussic acid, and a taste similar to that of the bitter almond.

C. P. The leaves of this shrub contain a considerable quantity of prussic acid, and an almost concrete essential oil, white, and very acrid. Water and alcohol dissolve their active principles.

Th. E. The modus operandi of this substance is the same as that of the prussic acid; it is only less energetic. The distilled water and essential oil are frequently employed by the Italian practitioners, who consider them as excellent contra-stimulants. Dr. Fouquier has performed a great number of experiments with this substance, to ascertain its mode of action. He says that he has administered the distilled water of cherry laurel in the dose of twelve ounces, and even more, a day, without obtaining any decided effects, if we except that at times vomiting, and at others a slight gastric disturbance, were produced. However, there are too many instances on record of poisoning from this substance to induce us to consider it as inert. Some new experiments will be necessary, in order ultimately to fix medical opinion on this subject. It has been recommended in nervous affections, in cases of obstructions of the abdominal viscera, in chronic pulmonary catarrhs, and, finally, in all cases in which the employment of prussic acid is indicated.

D. & M. of Adm. *Aqua lauro-cerasi*, P. Pol., Den., B., Pr., A., R. Dose, from gutt.vj. to ʒss., and more, gradually, in a mixture.——*Pectoral* mixture, Paris H. (Distilled water of cherry laurel, ʒss.; pectoral julep, ℥iv.) by spoonfuls.

Externally. *Infusum lauro-cerasi*, B. (Cherry laurel and honey, āā. 1; boiling water, 6.) In fomentations on cancerous ulcers.

Bitter Almonds. *Amygdalæ amaræ*, fruit of the *Amygdalus communis*, Var., Lin., possess a bitter taste, and a smell for which they are indebted to the prussic acid they contain. They act upon the economy in the same manner as the cherry laurel. Several German physicians, and particularly Dr. Hufeland, have administered them in the form of emulsion or otherwise, for the cure of intermittent fevers. A *distilled water of bitter almonds*, P., is prepared, and used in the same cases as that of the cherry laurel.

The almonds of the **Peach Tree**, *Persica vulgaris*, De Cand.; of the **Apricot Tree**, *Armeniaca vulgaris*, Lam.; of the **Plumb Tree**, *Prunus domestica*, Lin.; of the **Cherry Tree**, *Cerasus vulgaris*, Miller; **Small Black Cherry Tree**, *Cerasus avium*, Jussieu, &c., contain, as well as the preceding, some prussic acid, and possess, consequently, similar virtues. They are not, however, employed in the practice of medicine. It is from the bruised kernels of the small black cherries that the highly valued alcoholic liquor, called *Kirschenwasser* (cherry water), is obtained.

Prussic or Hydro-cyanic Acid. *Acidum hydro-cyanicum* seu *prussicum*. It exists in nature in several vegetables; but that which is employed in medicine is always the product of art.

P. P. This acid, called in its state of purity, Gay-Lussac's prussic acid, is liquid, transparent, colourless; of a fresh taste at first, then acrid and caustic; of an extremely strong smell, similar to that of bitter almonds, and of a specific gravity of 0.70585, the temperature being at 7° Centig. (45° Fahr.)

C. P. It is composed, according to M. Gay-Lussac, of carbon, 44.69; nitrogen, 51.66; and hydrogen, 3.65. It is very volatile, boils at 26° 5′ Centig. (89° Fahr.), and congeals by crystallizing at 15° Centig. (59° Fahr.) By pouring a few drops on a piece of paper, a part of the acid is so readily evaporated that the cold produced by this evaporation is sufficient to congeal the other. Left to itself, even in perfectly air-tight vessels, it is decomposed very rapidly, and acquires a reddish-brown hue more or less deep. Heated to a red heat, it is decomposed, and burns in the open air with a blue flame. It is very soluble in water and alcohol; but, as it is much lighter than these menstrua, it separates easily, and rises to the surface. It reddens litmus but slightly, combines with a few salifiable bases, and forms with them hydro-cyanates.

Incomp. Subst. The mineral acids, the salts of iron, the sulphurets, chlorine, the oxides of mercury, of antimony, nitrate of silver, &c.

Prep. The anhydrous, or Gay-Lussac's hydro-cyanic acid, is obtained by treating, in a proper apparatus, the bi-cyanuret of mercury with two-thirds of its weight of hydro-chloric, or hydro-sulphuric acid; but as this pure acid is not employed in medicine, different processes have been proposed in order to obtain it diluted with a determinate proportion of water. We shall not mention that of Scheele, because it has been justly abandoned on account of the inconstancy of its results. Vauquelin's process, such as it is indicated in the codex, gives an aqueous solution containing seventeen grains of anhydrous prussic acid to the ounce, that is, one-thirty-fifth by weight. That of Robiquet's, described likewise in the codex, gives a mixture of water and prusssic acid in equal parts. Finally, Dr. Magendie's process, the most certain of all, and the most generally adopted, consists in a mixture of Gay-Lussac's anhydrous acid with water, in the proportion of 1 of the former, to 6 of the latter by volume, or of 8 to 5 by weight. It is this

12.) Dose, cochl. j., morning and night, and gradually to vi. or viij. in the course of the day.——*Syrup of hydro-cyanate of potassa*, F. M. (Hydro-cyanate of potassa, 1; simple syrup, 128; one ounce contains, gr.4½ of hydro-cyanate of potassa. Dose, from ℥ss. to ℥j. in a mixture.

The Cyanuret of Zinc. *Cyanuretum zinci*, has of late been proposed in Germany as a substitute for the prussic acid. Dr. Henning says that he has used it with success, not only in cases in which this acid is commonly exhibited, but also in verminous diseases of children. He gives it in the dose of gr.j., mixed with pulverized jalap; and in the nervous affections called *cramp of the stomach*, he administers with advantage the cyanuret of zinc in the form of *Anti-gastralgic* powder, F. M. (Cyanuret of zinc, 6; calcined magnesia, 4; cinnamon, 3;), of which the patient takes from ten to twelve drops every four hours.

CHAPTER IX.

EMETIC SUBSTANCES.

Although a great number of remedial substances are capable, when taken into the stomach in considerable quantities, of inducing vomiting, we shall range under the denomination of *emetics*, (εμεω, I vomit), only such as produce this phenomenon in whatever manner they may be introduced into the circulation. In fact, these remedies act in this manner, not only in consequence of their local action, but also owing to a special influence which they exercise on the stomach and the abdominal muscles, which influence takes place after the absorption of their particles. Their general action is characterized by excitation of most of the organs, by increase of the cutaneous perspiration, or of the secretion of urine, development of the pulse, &c.

MINERAL EMETIC SUBSTANCES.

Super-tartrate of Potassa and Antimony. *Stibii et potassæ tartras,* seu *Tartarus emeticus.* Antimoniated tartrate of potassa. Tartar emetic. This double salt is always the product of art.

P. P. Tartar emetic crystallizes in octaedral or tetraedral, transparent, and colourless crystals; slightly efflorescent, inodorous, of a styptic and nauseous taste.

C. P. It contains 54 of tartrate of antimony, and 34 of tartrate of potassa. Heated, it becomes black, is decomposed, and produces metallic antimony. It dissolves in 15 parts of cold water and 2 of this menstruum when boiling; finally, it reddens powerfully the solution of litmus.

Incomp. Subst. The concentrated acids, the metallic oxides of the second class and their carbonates, the hydro-sulphates, soaps, gallic acid, and most of the bitter and astringent vegetable substances, such as Peruvian bark, rhubarb, &c.

Prep. Boil equal parts of cream of tartar and glass of antimony in twelve parts of distilled water; filter the liquor and crystallize.

12.) Dose, cochl. j., morning and night, and gradually to vi. or viij. in the course of the day.——*Syrup of hydro-cyanate of potassa*, F. M. (Hydro-cyanate of potassa, 1; simple syrup, 128; one ounce contains, gr.4½ of hydro-cyanate of potassa. Dose, from ℥ss. to ℥j. in a mixture.

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Prep. Boil equal parts of cream of tartar and glass of antimony in twelve parts of distilled water; filter the liquor and crystallize.

Th. E. The local action of the tartrate of potassa and antimony is essentially irritating; indeed, applied to the skin, it produces a pustulous eruption of a peculiar character, and an inflammation more or less intense. Taken internally, in large doses at once, it acts as a violent poison, and may produce a very lively inflammation of all the intestinal canal. Administered in small doses, the first effects resulting from its exhibition are frequent vomiting and alvine evacuations; but vomiting is not to be attributed to the local action of this substance, for as we have already mentioned, it takes place whenever tartar emetic is introduced, it matters not in what manner, into the circulation; whether it be ingested into the stomach, or injected into the veins, or, finally, applied to any absorbing surface whatsoever. Vomiting seems, therefore, to be under the control of a special action of this remedy upon the digestive canal. But these phenomena, which are always the consequence of the administration of the first dose of tartar emetic, soon disappear, if its exhibition be continued at short intervals, for instance, every hour, and even in very large doses. In this case, the appetite of the patient seems frequently to increase, and he is even tormented by hunger. Thus, from thirty-six to forty-eight grains of this salt may be administered in the twenty-four hours, without producing any symptoms of poisoning. We observe then some very remarkable effects, which it is impossible to account for in a satisfactory manner. The pulse is considerably slower, without, however, its strength being diminished; the cutaneous perspiration is, in general, much increased, and it may even become uninterrupted; but after continuing this administration for a few days, the patient often experiences a disgust for every kind of food, a general uneasiness, a great aversion to this medicine, and sometimes vomiting reappears in all its violence. Dr. Laennec thinks that this substance possesses likewise the property of rendering absorption more active. Drs. Jenner and Baron seem to have had this same opinion; since, for a considerable time, they both advised the employment of tartar emetic in minute doses, so as to produce continual nausea, in the treatment of tubercular pulmonary phthisis, in cases of tubercular degeneration of the pleura, peritoneum, and liver; and in chronic engorgement of the glands.

From what we have just stated, it is evident that tartar emetic may fulfil two very different indications, according as it is administered in one way or the other. It has for a long time been exhibited for the sole purpose of provoking vomiting, and it is still at this time one of the emetic substances most frequently used, and the administration of which is most certain and easy. For these few years past, Dr. Rasori, and several other physicians, have called the attention of the profession to the advantages which might be derived from the employment of this salt, in large and continued doses, in the treatment of acute inflammatory diseases. They consider it as one of the most energetic contra-stimulants, and they administer it as such with positive advantage, provided the first doses do not produce vomiting or superpurgation. Several French practitioners, and amongst others Dr. Laennec, have ascertained the efficacy of this means in the treatment of peripneumony, jaundice, hepatitis, and in parenchymatous inflammations generally.

D. & M. OF ADM. As a vomit, gr.j. to iv. in two tumblerfuls of lukewarm water, by half tumblerfuls every half an hour. As a purgative gr.j. to ij., in ℔ij. of an aqueous menstruum, of which a tumblerful is given every hour. As a contra-stimulant, gr.iv. to ℈j., and gradually to ℈ij. in 24 hours.——*Dr. Laennec's contra-stimulant apozem*, PARIS H. (Tartar emetic, gr.vj.; infusion of orange tree leaves, ℔j.; simple syrup, ℥ij.) Dose, ℥iij. every two hours. The dose of tartar emetic is increased three grains a day.——*Vomitive draught* called *Holy Water*, PARIS H. (Tartar emetic, gr.vj.; water, ℥viij.) To take in two doses, every hour, in the treatment of colica pictonum, as used at *La Charité*.——*Vomitive mixture*, PARIS H. (Tartar emetic, gr.iij.; syrup of honey, ʒss.; water, ℥iv.) Dose, one ounce every hour.——*Emeto-cathartic mixture*, PARIS H. (Tartar emetic, gr.ij.; sulphate of soda, ℥ss.; veal broth, ℔ij.) Dose, a tumblerful every half hour.——*Dr. Peysson's stibio-opiated mixture*, PARIS H. (Tartar emetic and opium, āā. gr.j.; gum tragacanth, ℈j.; orange-flower water, ʒij.; water, ℥viij.) Dose, cochl. j. every half hour.——*Vinum antimonii tartarizati*, U. S. (Tartarized antimony, ℈ij.; distilled water, f.℥iv.; wine, f.℥vj.; four grains to the fluid ounce.)—L., F., PR., DEN., POL. (Tartarized antimony, ℈j.; boiling distilled water, f.℥viij.; rectified spirit, f.℥ij.)——E. *Vinum tartratis antimonii*. (Tartrate of antimony, gr.xxiv.; Spanish wine, ℔j.;) f.℥i. contains gr.ij. of tartarized antimony. Dose, as a diaphoretic, ♏x. to f.ʒj.; as an emetic, one or two tea-spoonfuls every ten minutes until vomiting be excited.——*Vinum antimoniale*, P. (Tartar emetic, 1; white wine, 500;) one ounce contains a little more than one grain of tartar emetic. As an emetic, (seldom used.) Dose, from ℥j. to ℥ij.; as a diaphoretic, ʒj. to ʒiv.

Externally. Gr.xij. to ℈j. on a Burgundy pitch plaster.——*Unguentum antimonii tartarizati*, NEW YORK H. (Tartar emetic, ʒjss.; spermaceti ointment, ℥j.)—P. (Tartar emetic, 5; axungia, 16.)—PARIS H. (Tartar emetic, 1; axungia, 8.)—PR. (Tartar emetic, 1; axungia, 2.) In frictions.——*Linimentum ammoniæ et antimonii tartarizati*, U. S. (Liniment of ammonia, f.℥j.; tartarized antimony, ʒj.)——*Emplastrum tartratis potassæ stibiatæ*, B. (Tartar emetic and simple plaster, āā. q. s.)

KERMES MINERAL. SUB-HYDRO-SULPHATE OF ANTIMONY. *Stibii hydro-sulphuretum rubrum. Kermes minerale.* This compound does not exist in nature.

P. P. Kermes mineral is a reddish-brown powder, with a tinge of purple, of a velvet-like appearance, light, inodorous, and of a metallic taste, which is but slowly developed.

C. P. Chemists do not agree as to the nature of this substance; they consider it generally as a sub-hydrated sulphate of antimony, with an excess of base; but according to Berzelius's experiments, it appears to be a hydrated sulphuret of antimony in a state of great division, and formed of 100 of antimony, and 37.2 of sulphur. However, kermes is insoluble in water, but it dissolves in some sulphuretted hydro-sulphates, such as those of potassa and lime. On exposure to the air and light, it loses its red colour and velvet-like appearance. Heated to a red heat with charcoal, it is decomposed, and is converted into metallic antimony.

Incomp. Subst. All the acids.

Prep. There are two ways of preparing this substance, namely, the *dry* and the *humid*. The former is accomplished by heating in a crucible one part of sulphuret of antimony, and two parts of the potass of commerce. The mass thus obtained is to be powdered, and then boiled in ten or twelve parts of water. The liquor is next filtered, and set aside, that the kermes may precipitate on cooling. When kermes is prepared by the humid process, one part of sulphuret of antimony in fine powder, and twenty-two and a half parts of crystallized sub-carbonate of soda, are to be boiled for half an hour in 250 parts of water. The kermes precipitates on cooling, the same as in the former process. Kermes prepared according to the latter process is more highly estimated than that procured by the dry method.

Th. E. When administered in the dose of a few grains, kermes acts as an emetic, but if we commence by giving small doses, we may gradually increase the quantity, as with tartarized antimony, till we arrive at very large doses, without producing vomiting. It then acts as a stimulant, and appears to exert its influence more especially on the lungs, and on the cutaneous surface. Thus, it may be employed to great advantage in the last stage of acute peripneumony, in chronic catarrh, humid asthma, &c. It may be also administered as a sudorific in diseases of the skin, chronic rheumatism, gout, &c.

D. & M. of Adm. As emetic, gr.vj. to gr.x. suspended in a mucilaginous menstruum. As an expectorant, gr.½ to iv. in an emulsive mixture. As a contra-stimulant, gr.ij. to ℈j. and more, progressively.——*Kermes and camphor boluses*, Paris H. (Kermes mineralis, gr.j.; camphor, ℈j.; cream of tartar, gr.xv.; yolks of eggs, q. s.; for four boluses.) Dose, from No. j. to No. iv. a day.——*Gummous mixture with kermes*, Paris H. (Kermes, gr.j. to gr.iij.; gummous mixture, ℥iv.; gum tragacanth, gr.vj.) Dose, a table-spoonful every hour.

Golden Sulphuret, or Sulphuretted Sub-hydro-sulphate of Antimony. *Hydro-sulphuretum luteum stibii sulphurati*, seu *Sulphur auratum antimonii*. This compound is always the product of art.

P. P. The golden sulphuret of antimony is a powder of an orange yellow colour, inodorous, and tasteless.

C. P. According to Thénard, it is formed of sulphur, 12; hydro-sulphuric acid, 17.87; and protoxide of antimony, 68.30. Berzelius considers it as a sulphuret of antimony, composed of 100 of this metal, and 49.6 of sulphur. It is insoluble in water; it acts with reagents in the same manner as kermes.

Prep. It is obtained by pouring a few drops of nitric or acetic acid into the mother-waters from which the kermes has been procured. The precipitate is washed and dried where light cannot have any access.

The American Pharmacopœia gives the following formula: solution of potassa, ℔iv.; water, Oiij.; prepared sulphuret of antimony, ℔ij.; boil them in a covered iron pot, over a slow fire, for three hours, frequently stirring the mixture with an iron spatula, and adding water as it may be required; strain the hot liquor through a double linen cloth, and add to it when strained as much diluted sulphuric acid as may be necessary to precipitate the sulphuret, which must be well washed with warm water.

Th. E. This substance possesses the same virtues as the kermes, and is employed in the same cases and manner. It is now seldom used.

D. & M. of Adm. The same as those of the preceding substance.

Sulphuret of Antimony. *Sulphuretum antimonii.* Crude antimony. This substance exists abundantly in nature, and is found in England, France, Hungary, &c.

P. P. The sulphuret of antimony is in masses, formed of shining crystalline needles, of a bluish grey, staining paper black; without taste, and of the specific gravity of 4.5.

C. P. It is formed of 100 of antimony and 37 of sulphur. Heated in the open air it melts easily, and disengages sulphurous acid; deprived of the contact of air, it is not decomposed. It is insoluble in water, but dissolves in hydro-chloric acid, by producing a considerable disengagement of sulphurous acid.

Prep. It is separated from its ore by fusion, and reduced to impalpable powder for medical use.

Th. E. The sulphuret of antimony was formerly administered internally as an emetic and a diaphoretic, but is now almost entirely out of use. Several physicians, however, recommend its employment in scrofulous engorgements, cutaneous diseases, and old venereal affections which have withstood the mercurial treatment. It is employed in the preparation of kermes, and it enters into the composition of several officinal preparations.

D. & M. OF ADM. Gr.viij. to ℈j., and even ʒj. in suspension or pills.— *ker's antimonial lozenges*, P. (Sulphuret of antimony and small cardamom, 3; sweet almonds, 4; cinnamon, 1; sugar, 32; for twelve grain lozenges.) Dose, from No. iv. to x. a day.

Several other antimonial preparations were formerly employed as emetics and diaphoretics, but they are now justly discarded. We shall mention only the following as the principal ones:—

GLASS OF ANTIMONY. *Vitrum Antimonii*, a mixture of sulphur and oxide of antimony, united to silica and oxide of iron. It is obtained by melting some crude antimony in a clay crucible, and pouring out the liquid matter, after having kept it for a while in fusion. On cooling, it forms transparent, vitreous scales of a hyacinth colour. This preparation is a violent emetic, and is no longer used, except by the physicians of the contra-stimulant school. *Vitrum antimonii ceratum*, P. (Glass of antimony, 8; yellow wax, 1;). Dose, from gr. j. to ij., in syrup, two or three times a day.

ANTIMONIAL POWDER. *Pulvis antimonialis*, a mixture, or perhaps a triple combination of oxide of antimony, of phosphoric acid and lime, obtained by calcining, in an iron crucible, equal parts of sulphuret of antimony and hartshorn shavings. This compound, seldom used in France, is, on the contrary, frequently employed in this country, and highly spoken of by some practitioners as an excitant and a diaphoretic. It is given in the dose of from three to eight grains, in powder or in pills, every fourth or fifth hour.

UNWASHED DIAPHORETIC ANTIMONY, OR ROTROU'S SOLVENT. *Antimonium diaphoreticum non ablutum*, is a compound of sulphate and ammoniate of potassa, prepared by heating to a red heat, in a crucible, a mixture of three parts of nitrate of potassa and one of sulphuret of antimony. By treating with water the matter thus produced, a white powder is obtained, which may be considered as an ammoniate of potassa, and is called WASHED DIAPHORETIC ANTIMONY. These compounds have enjoyed a great reputation as diaphoretics and solvents; they were administered formerly in the dose of from gr.xij. to ℈j., in a mixture. They are almost out of use at present.

ALGAROTTI'S POWDER. *Pulvis algarotti* is a sub-hydro-chlorate of antimony which was once employed as an emetic, but is now used only for preparing tartar emetic.

Crocus metallorum. *Crocus antimonii* is a mixture of three parts of oxide with one of sulphuret of antimony.

The sulphates of zinc and copper, which we have already described under another head, are occasionally used as powerful emetics.

VEGETABLE EMETIC SUBSTANCES.

Family Rubiaceæ.

OFFICINAL OR ANNULAR IPECACUANHA. *Radix ipecacuanhæ. Cephaelis ipecacuanha*, Richard. A very small shrub, growing in Brazil, in thick and shady woods.

P. U. The root.

B. C. Root or stump subterranean, horizontal, repent; stem straight, one or two feet high, simple; leaves six or eight at the top of the stem, opposite, entire, and oval; flowers white, very small, united in a capitulum looking apparently as the continuation of the stem, surrounded with a large involucrum; calix five-toothed; corolla infundibuliform, five divided; five stamina; fruit ovoid, black, and containing two small whitish nuts.

P. P. The root of ipecacuanha, such as is found in the shops, is from three to four inches long, compact, brittle, irregularly twisted, of the size of a goose-quill; annulated with considerable circular depressions at short intervals; of a brown colour; sometimes grey or reddish; of a weak but disagreeable smell; of a bitter, acrid, and nauseous taste. It is composed of a cortical part, the fracture of which is brown and resinous, and of a fibrous *meditullium*, of a yellowish colour, less sapid and odorous.

C. P. According to Pelletier, this root is composed of *emetine*, 16; fatty matter, 1.2; resinous substance, 1.2; gum and salts, 2.4; starch, 53; matter containing nitrogen, 2.4; lignin, 12.5; and traces of gallic acid. Warm water, alcohol, and ether, take up its active principles.

TH. E. Administered in moderately large doses, ipecacuanha acts on the stomach so as to produce vomiting, and even alvine evacuations. It therefore exerts an irritating action, more or less lively, on the mucous membrane of the alimentary canal. Notwithstanding, however, its emetic property, ipecacuanha is endowed with a high degree of tonic power. This is observed when the remedy is administered in small doses. Its tonic power is more especially exerted on the lungs. Given in very large doses it is capable of acting on the brain, and of producing drowsiness, more or less profound.

Ipecacuanha is commonly employed to produce vomiting, but its emetic effect is less sure than that of tartarized antimony; there are, however, some cases in which the former is preferable. Ipecacuanha has been extolled as a remedy for dysentery and puerperal peritonitis; but, although it is far from possessing all the virtues which have been attributed to it, still it may be found useful in some cases of this nature. This substance is frequently employed, and with much success, in minute doses, to excite the action of the stomach, as well as to stimulate the bronchial mucous membrane in certain cases of pulmonary catarrh, croup, and hooping-cough.

D. & M. OF ADM. *Powder*, as an emetic, gr.xv. to xxx., in lukewarm water; as a stimulant, gr.j. to iv.——*Mistura ipecacuanhæ composita*, mixture for hooping-cough, P. (Ipecacuanha, 1; senna leaves, 2; oxymel of squills and hyssop syrup, āā. 8; boiling water, 48.) By table-spoonfuls.——*Vomitive mixture*, PARIS H. (Ipecacuanha, ℈j.; tartar emetic, gr.j.; syrup of honey, ℥ss.; water, ℥iv.) To be taken in four doses, every half hour.——*Pulvis ipecacuanhæ et cupri sulphatis*, L. (Ipecacuanha, ℈j.; sulphate of copper, gr.v.)——*Pulvis emeticus*, GUY's H. (Ipecacuanha, ʒx.; tartar emetic, ʒss.) Dose, from gr.v. to xxx.——*Pulvis ipecacuanhæ cum rhæo*, GUY's H (Ipecacuanha, ʒj.; rhubarb, ʒij.) Dose, from gr.[illegible] to v.) Two, three, or four times a day.——*Tinctura ipecacuanhæ*, P. (Ipecacuanha, 1 part; alcohol, 4 parts.) Dose, from ℥ss. to ℥j.——*Vinum ipecacuanhæ*, L., E., D., B., F., U. S. (Ipecacuanha, 1 part; Spanish wine, 16.) As emetic ℥ss. every quarter of an hour; as a stimulant and a diaphoretic, gutt.xx. to x[illegible] several times a day.)——*Haustus ipecacuanhæ cum antimonio*. (Wine of ipecacuanha, ʒvj.; antimonial wine, ʒij.)——*Syrupus ipecacuanhæ*, P. (Ipecacuanha, 1; water, 14; sugar, 24; one ounce contains about 16 grains of ipecacuanha.) Dose from ℥ss. to ℥ij.——*Mixture against croup*, PARIS H. (Syrup of ipecacuanha, [illegible] tartar emetic, gr.jss.; oxymel of squills, ʒiij.; infusion of polygala, ℥iv.) By spoonfuls.——*Ipecacuanha lozenges*, P. (Ipecacuanha, 1; sugar, 40; mucilage of tragacanth with rose water, q. s.; for 12 grs. lozenges, each of which contain ¼ of ipecacuanha.) Dose, from No. iv. to x.

STRIATED IPECACUANHA. *Psychotriæ radix*. *Psychotria emetica*, Lin. A small shrub, similar to the preceding, and growing in Peru.

P. U. The root.

B. C. Stem fifteen inches to two feet high; leaves lanceolate, acute; flowers white, small, in short clusters in the axilla of the leaves; fruit ovoid, crowned by the teeth of the calix.

P. P. The roots of the striated ipecacuanha are cylindrical, simple, of the size of a quill, less twisted than those of the *cephaelis*, not rugose, with circular depressions and elevations at short intervals, covered with an epidermis of a deep brown colour, and longitudinally striated; their fracture is of a blackish brown, slightly resinous, and their taste is insipid and nauseous.

C. P. The chemical composition of this substance differs little from that of the *cephaelis*, except that it contains 8 per cent. only of emetine.

Th. E. The same as those of the officinal ipecacuanha, with which it is sometimes mixed in commerce. It is much less energetic than the preceding, and is seldom employed in Europe or in the United States, whilst it is almost exclusively so in South America.

White or Undulated Ipecacuanha, *Radix Richardsoniæ*, is furnished by the *Richardsonia brasiliensis*, Gomez, which grows in meadows in the neighbourhood of Rio Janeiro. This plant is of the same size as the officinal ipecacuanha, of a whitish-grey colour externally, of a meal-white inside; the cortical part is marked with semicircular furrows, and seems undulated. The white ipecacuanha is sometimes mixed in commerce with the officinal ipecacuanha. It is much less emetic than the latter, and contains only 6 per cent. of emetine, besides a considerable quantity of starch.

The family *Rubiaceæ* furnishes several other plants, the roots of which are endowed with emetic properties, but they are seldom used. We shall mention, according to M. Augustus de Saint-Hilaire, the *Spermacoce poaya* and *ferruginea*, the *Richardsonia rosea* and *scabra*, and the *Psychotria herbacea*.

Emetine. A vegetable alkaline substance, discovered by M. Pelletier in the root of the *Cephaelis ipecacuanha*, and existing in variable proportions in the different species of ipecacuanha.

P. P. This substance is pulverulent, white, inodorous, unalterable in the air, of a bitter and disagreeable taste.

C. P. It is composed, according to Messrs. Pelletier and Dumas, of carbon, 64.57; nitrogen, 4.00; hydrogen, 7.77; oxygen, 22.95. It is very soluble in alcohol, much less so in boiling water, and almost insoluble in this menstruum, when cold. It is dissolved neither by the oils nor by ether, the latter of which precipitates it from its alcoholic solutions. It possesses alkaline properties, and dissolves in the acids with which it forms acid salts, capable of crystallization. Heated, it melts at 50° Centig. (122° Fahr.) It is decomposed at a high temperature.

Incomp. Subst. Infusion of galls, gallic acid, &c.

Prep. Treat the pulverized ipecacuanha with ether, in order to liberate it from the fatty matter, digest in alcohol; evaporate to dryness the alcoholic tincture, and treat the residue with cold water, which separates the remaining fatty matters. Afterwards employ calcined magnesia to take up the gallic acid, wash the magnesian precipitate, and separate the emetine by dissolving it in concentrated alcohol.

Th. E. Emetine, even in small doses, is a powerful emetic, and seems to act upon the nervous system, as is evinced by the tendency to sleep, and even the more or less profound drowsiness, which are the consequence of its administration. In large doses, it produces, besides vomiting, a violent inflammation of the lungs and of the gastro-intestinal mucous membrane. It may be exhibited in all cases in which the use of ipecacuanha is indicated; however, as its action is very energetic, its administration requires a good deal of judgment and caution on the part of the practitioner.

D. & M. of Adm. Gr.¼ to ij. to a mixture of ℥iv.——*Vomitive mixture*, F. M. (Pure emetine dissolved in acetic acid, q. s., gr.j.; infusion of linden tree flowers, ℥iij.; simple syrup, ℥j.) Dose, cochl. j. every quarter of an hour, until it operates. ——*Emetine syrup*, F. M. (Emetine, gr.iv.; simple syrup, ℔j.; one ounce contains ¼ of a grain of emetine.) Dose, from cochl. min. j. to iv.——*Emetine lozenges*, F. M. (Emetine, gr.viij.; sugar, ℥iv.; for 9 gr. lozenges, each of which contains 1-32 gr.) Dose, from No. 1 to 2 every hour.

Impure Emetine, called by Dr. Magendie *coloured emetine*, is likewise employed. Its action, compared to that of the pure article, is in the proportion of one to three. It is procured in transparent scales, very deliquescent, and consequently soluble in water, of a weak odour and bitter taste. The pure emetine is preferable to the other, on account of its being more certain in its operation. It is necessary that the physician should carefully designate which of these two preparations it is his intention to prescribe.

Family Euphorbiaceæ.

Ipecacuanha-spurge. *Euphorbia ipecacuanha*, Lin. A perennial plant, native of the United States of America.

P. U. The root.

B. C. Stems numerous, dichotomous, white under the earth and sand, red, pale green, or yellow above; the stipules are heart-shaped and small; leaves opposite, sessile, generally oval and entire, very small while the plant is in blossom, but increasing in size when it grows older; flowers on solitary, uniflowered, and axillary peduncles; perianthe small, campanulate, five-lobed; capsules round, three-angular-like and smooth, containing three seeds.

P. P. The fresh root is from three to seven feet long, tuberculated, and of a yellowish colour; from half an inch to an inch in diameter, its taste is then acrid. The dry root is light and brittle, has a sweetish and not very disagreeable taste.

C. P. We may infer, from Dr. Bigelow's experiments, that this root contains caoutchouc, resin, mucilage, and probably fecula. Dr. Staples has ascertained that it contains no emetine.

Th. E. Dr. Bigelow states that he has found this root, in the majority of instances in which he has exhibited it, to operate with as much ease as the other emetics. In large doses, however, it excites active and long-continued vomiting, attended with a sense of heat, vertigo, indistinct vision, and prostration of strength. Administered in moderate doses, it is a safe and efficacious emetic, but it acts sometimes also on the bowels, rather more than the officinal ipecacuanha. In combination with sulphate of potassa and opium, it furnishes a Dover's powder, which is in no way inferior to the *Pulvis ipecacuanhæ compositus*. Indeed, it has this advantage over the *cephaelis ipecacuanha*, that its taste and odour are not so unpleasant.

Family Phytolaceæ.

Poke-root. American Nightshade. *Phytolacca decandra*, Lin. A tall, herbaceous plant, growing abundantly in every part of the United States, and now naturalized in many parts of Europe.

P. U. The root principally, but the leaves and berries are also employed.

B. C. Stem from five to seven feet high, thick, round, branched, and glabrous; leaves ovate, narrow at both ends, acute, veined on the under side, and smooth on both; flowers in long racemes, often opposite to the leaves; perianthe five-leaved, divisions concave and ovate, folding inwards; stamina short, from seven to twenty, with double anthera; styles from five to ten; fruit, a superior, ten-celled, ten-seeded berry.

P. P. This root is thick, fleshy, and sometimes of a considerable size.

Th. E. The numerous experiments made with this plant by Drs. Bigelow, Fisher, Haywards, Shults, &c., tend to prove its valuable therapeutical properties. As an emetic it seems hardly inferior to ipecacuanha; ten grains of the powder will seldom remain on the stomach, and twenty or thirty grains will always produce a powerful emesis, and sometimes catharsis. It operates with ease, and rarely occasions nausea, pain, or cramp; it is rather slow in its effects, but continues to operate for a longer period of time than is usual with emetics, though it is readily checked with opium. In the form of decoction, tincture, or extract, it has obtained some reputation in the treatment of rheumatic affections, and especially in syphilitic rheumatism, or in cases of scrofula. This medicine has, in some instances, produced slight narcotic effects.

As an external application, it has proved very beneficial in all sorts of cutaneous diseases, in cancerous sores, &c. It acts as a local stimulant, and a mild caustic. It has been used with advantage in fistula lachrymalis, in the form of an extract, applied twice a day on the part affected; and in hæmorrhoids, given internally in the form of an infusion, and when it does not operate, the same infusion is to be injected into the rectum. This method will, in general, effect a perfect cure.

Family Campanulaceæ.

INDIAN TOBACCO. *Lobelia inflata*, Lin. A biennial plant, growing almost throughout the United States.

P. U. The leaves and capsules.

B. C. Stem upright, solitary, angular, much branched about midway; leaves irregularly scattered, alternate, oval, generally sessile, with margins unequally dentated; flowers in terminal racemes, supported on short peduncles; corolla monopetalous and labiate, blue externally, violet within; capsules inflated, egg-shaped, containing numerous small seeds.

P. P. Leaves and capsules very acrid, taste similar to that of tobacco, producing a copious discharge of saliva, sickness at the stomach, and giddiness.

TH. E. Indian tobacco is a powerful emetic, frequently producing at the same time alvine evacuations. In large doses it occasions great relaxation, debility, and perspiration. In numerous instances of asthma it has procured the most essential relief, though in general its effects were only temporary and palliative. As a pectoral, it has been found useful in consumptive and other coughs depending on mucus accumulated in the bronchial air-vessels, by exciting nausea and expectoration. From its very speedy operation as an emetic, and its stimulating effects on the mouth and fauces, beneficial results might be expected from its use in croup and hooping-cough.

D. & M. OF ADM. As a vomit, powder, gr.x. to ℈j. for an adult.——*Saturated tincture*, ʒj. to ʒiv. As an expectorant, in smaller proportions. The saturated tincture may be administered to children of two years old in doses of gutt. x to xl.

Family Myriceæ.

WAX MYRTLE. CANDLE-BERRY MYRTLE. *Myrica cerifera*, Lin. A native shrub of North America, most abundant on the sandy sea-coast.

P. U. The bark of the root, and the wax, or concrete oil obtained from the berries.

B. C. Stem ramose, furnished with a greyish bark, from six to twelve feet high; branches cylindrical, covered with a brown or slightly reddish epidermis; leaves alternate, oblong, lanceolate, pointed at top, and scattered with resinous atoms; aments loose; axillary short; calycinal scales acute, not shining; fruit, a globular berry, furnished externally with an unctuous white powder, and containing a large quantity of wax.

Prep. The shrub which yields the myrtle, and abounds in many parts of the United States, particularly in Pennsylvania, New Jersey, Delaware, Virginia, the Carolinas, and Louisiana. It varies in height from three feet to the size of the common cherry tree, and bears a small berry, covered with a shining down of a grey-ash colour, which being melted in boiling water, collects on the surface, and forms a cake of solid wax.

P. P. Myrtle wax is a concrete oil of moderate hardness and consistence; it has in part the tenacity of bees wax, though without its unctuosity; along with this it also possesses in some degree the brittleness of the resins. The colour of the myrtle wax is a pale green; the shades of the different species are somewhat varied; in most of them the green has a tendency to a dirty grey; in others it is lighter and more transparent. Its specific gravity is about 1.0150. It is fused at a temperature of 109° Fahr.; by sufficiently increasing the heat, it burns with a peculiar, clear, and white flame, producing little smoke, and during the combustion emits an agreeable aromatic odour.

C. P. The berries of the *Myrica cerifera*, according to Dr. Dana's analysis, contain wax, 32; resino-extractive, 5; black powder, 15; kernels, 47; loss, 0.50.

Bostock, in his analysis of myrtle wax, found—1st. That water has no action upon it, either when cold, or at the boiling point. 2d. Alcohol, when boiling, dissolves it sparingly, and it precipitates again on cooling. 3d. Sulphuric ether, at the common temperature of the atmosphere, dissolves it only in small quantities, but acts upon it rapidly when boiling, the greater part of which separates as the ether cools. 4th. Rectified oil of turpentine, at the temperature of the atmosphere, softens the wax; assisted by heat, one hundred grains of the spirit dissolve six grains of the wax, part of which separates as the fluid cools. 5th. When boiled with liquid potassa the fluid becomes turbid, and the wax rises to the surface nearly without colour, in a flocculent form. In this saponaceous state it has lost its inflammability and fusibility, and forms an opaque solution with water. 6th. Pure ammonia exhibits with it phenomena in many respects similar to those produced by the fixed alkalies, though in a less degree than that resulting from the action of potash. 7th. The mineral acids have but little effect upon it; the sulphuric when assisted by heat converts it into a dark brown mass; the nitric changes the colour from green to a pale yellow; and by long digestion in muriatic acid, it becomes a bright orange.

Th. E. The *Myrica cerifera* seems to possess considerable medicinal properties. The bark of the root is employed in domestic practice, in cases of jaundice; and in powder, it has been administered as an emetic. Its strength has been considered equal to that of ipecacuanha. Considerable astringency, as well as narcotic and anodyne quality, has been attributed to the wax. This substance has been used successfully in cases of typhoid dysentery, in the dose of from one drachm to two, rubbed into powder, or made into pills.

There are, besides, a great many European or foreign plants, the roots of which possess emetic properties, but as they are not generally used in practice, we shall merely mention the principal ones.

Ionide. *Ionidium ipecacuanha*, Ventenat. *Viola ipecacuanha*, Lin., of the family *Violaceæ*, and growing in Cayenne and Brazil. Its root is cylindrical, of the size of a quill, twisted, of a greyish white. It contains starch, traces of matter producing vomiting, some salts and fatty substances.

Sweet Scented Violet. *Viola odorata*, Lin., Willd. **Violet**, *V. arvensis*, Lin.; **Dog-violet**, *Viola canina*, Lin., &c.; all these plants, growing spontaneously, possess properties analogous to the preceding, although weaker: for which they are indebted to an alkaloid principle, nearly related to emetine, discovered by M. Boulay, who has called it *Violine. (violia.)* This substance possesses the same virtues as the real emetine, and seems only to be endowed with a more marked purgative action.

The *Cynanchum ipecacuanha*, Richard; *C. tomentosum*, Lin.; *Asclepias curassavica*, Lin.; *Periploca emetica*, Retz, &c.; all belonging to the family *Apocyneæ*, are used as substitutes for ipecacuanha, in the countries where they grow.

M. Loiseleur Deslongchamp's experiments tend to prove, that several species of the family *Euphorbiaceæ*, natives of

France, possess emetic properties for which they are indebted to the milky juice they contain. He advises, consequently, to administer, instead of the exotic ipecacuanha, the roots of *Euphorbia cyparisias*, Lin.; *E. gerardiana*, *E. sylvatica*, Lin., &c. None of these plants, however, have yet been used in France to any extent, nor do they contain a substance analogous to emetine.

CHAPTER X.

PURGATIVE REMEDIES.

UNDER the name of purgatives were once designated all the remedial substances which are capable of accelerating or producing alvine evacuations; but as this property belongs also to substances, the modus operandi of which is very different, they have been divided into two classes—*purgatives*, properly so called, and *laxatives*, of which we intend to speak in the sequel of this work. We now give the name of purgative or *cathartic*, (from Καθαιρω, I purge), to a remedy which induces, on the internal surface of the intestines, a transient, moderate, and special irritation, producing alvine evacuations.

It appears, from late experiments, that some substances, when introduced into the circulation, produce the phenomena of purgation as readily as when they act locally upon the intestinal mucous membrane; but they are seldom administered in this way. Indeed, it is on their local action that depends the principal medication which they generally produce. Their contact induces an increase of sensibility, irritation, and tumefaction of the mucous membrane which lines the intestinal canal; the secretion, of which this membrane is the seat, becomes more abundant; the excitation is extended to the liver, and promotes a greater affluence of bile into the digestive tube; the muscular coat participates also in this latter effect: the contractions of its fibres are accelerated, and they briskly expel the matters contained in the intestines.

Purgatives may produce the general irritation upon which these phenomena depend, over the whole extent of the intestinal canal, or may act only in a very limited manner upon one of its parts. Colchicum is an instance of the first case: aloes of the second. In fact, this latter substance affects more especially the large intestine. However, their administration is generally followed by a disgust for aliments, and even nausea, with a sensation of internal heat, with more or less lively pains in the abdomen, borborygms, and a slight swelling of the belly. These phenomena are attended with general symptoms which deserve to be noticed; the pulse becomes weak and irregular, at the same time that the patient is more violently griped. It soon after acquires a greater strength and frequency; the animal heat increases, and the skin becomes dry and warm. The number of the alvine evacuations produced during the action of the purgatives, varies, as well as the nature and quantity of the matter passed.

According to the degree of energy with which purgatives act, they have been designated by the names of *Laxatives*, *Minoratives*, or *Eccoprotics*, (εκ, out, and κοπρος, excrements); of *cathartics*, which keep a medium between the laxatives and the *drastics*, (δραστικος, δραω, I operate powerfully.) The latter are the most violent purgatives.

Besides the effects mentioned above, purgative remedies may produce important secondary effects.

1st. The diminution of the activity of the circulation is not only produced by the evacuation of the alvine matters accumulated in the intestine, and by thus putting a stop to a cause of general irritation, but also by diminishing the mass of blood in circulation, in consequence of the increase of the secretion they induce. In fact, Mr. Robinson, who has performed a great number of experiments on perspiration and other secretions, has found that a strong purgation may diminish from two to three pounds the weight of the body.

2d. The greater activity of absorption which takes place in the cavities of the human body. This phenomenon is likewise a consequence of the increase of the secretion of which the intestinal mucous membrane is the seat. For, as we have already mentioned, absorption seems always to be more rapid, in proportion as the mass of humours in circulation is smaller. Purgatives which are administered with the view of increasing absorption in cases of partial or general dropsies, are called *Hydragogues*, (υδωρ, water, and αγω, I expel.)

3d. The increased secretion of bile. This phenomenon has given rise to the appellation which some purgatives have received, namely, that of *Cholagogues*, (χολη, bile, and αγω, I expel.)

4th. Finally, a powerful revulsion, tending especially to diminish the determination of blood towards the head.

It is in order to obtain one of these effects that purgatives are administered in certain dropsies, in liver complaint, catarrhal affections, certain fevers, apoplexy, hysteria, diseases of the skin, &c.

Purgatives are furnished by the mineral and vegetable kingdoms. The first are neutral salts, most of which have for base soda, potassa, or magnesia. They are soluble in water, have a fresh, salt, or bitter taste. Their action upon the economy is pretty uniform; they produce an abundant secretion of serosity, and act especially upon the stomach, and the small, but very slightly upon the large, intestine. Indeed, their exhibition is not followed with costiveness, as is the case with certain vegetable substances. Finally, when they are absorbed, they generally produce a more abundant secretion of urine. They are commonly administered in a watery solution, and in doses of from four drachms to one ounce.

The purgatives furnished by the vegetable kingdom act in general with greater violence, and irritate the intestines more than the saline purgatives. Most of them possess an odour more or less nauseous, and a bitter taste. They contain resins, gummo-resinous matters, and bitter extractive principles. Their mode of administration and doses vary, as we shall notice hereafter.

MINERAL PURGATIVE SUBSTANCES.

Sulphate of Soda. *Sodæ sulphas.* Glauber's salt. This salt exists in the waters of several mineral springs.

P. P. It is in long six-sided prismatic crystals, fluted, white, transparent, very efflorescent, inodorous, of a bitter, cold, and salt taste, and of the specific gravity of 2.246.

C. P. According to Berzelius it is composed of sulphuric acid, 24.64; soda, 19.36; and water of crystallization, 59. It is very soluble in water, at 33° Centig. (91° Fahr.), and its solubility diminishes above and below this point. Heated, it melts in its water of crystallization, and, at a high temperature, it passes to the ignited fusion without being decomposed.

Incomp. Subst. The salts of baryta, of lead, &c.

Prep. By decomposing carbonate of soda by sulphuric acid.

Th. E. It is a very gentle purgative, and its action is constant, and produces very little irritation. It is much resorted to in all cases requiring the exhibition of mild purgatives, and especially in febrile affections, jaundice, cutaneous diseases, &c. Administered in doses insufficient to act as a cathartic, it is absorbed, and exercises a very decided diuretic influence.

D. & M. of Adm. As a cathartic, from ℥j. to ℥ij. in ℔j. of water. As a diuretic, from ℈iij. to ℈v. with one-third of nitrate of potassa in ℔ij. of water, three or four times a day.——*Royal ptisan*, P. (Sulphate of soda, senna leaves, and pimpinella, āā. 4; aniseed and coriander, āā. 1; boiling water, 250; lemon, q. s.)——*Purgative draught*, Paris H. (Sulphate of soda, ℥ss.; senna leaves, ʒij.; water, ℥iv.; buckthorn syrup, ℥j.)——*Purgative injection*, Paris H. (Sulphate of soda, ℥ss.; senna leaves, ʒiij.; boiling water, ℔ij.)

Sulphate of Magnesia. *Magnesiæ sulphas.* Epsom salt, Seidlitz, or Egra salt. Bitter cathartic salt. It is found in solution in the sea water and in that of several mineral springs, and particularly in that of Epsom.

P. P. This salt is solid, in four-sided prismatic crystals, or in masses composed of a great number of small needles, white, inodorous, of a bitter and disagreeable taste, and of the specific gravity of 1.66.

C. P. It is composed of sulphuric acid, 32.405; magnesia, 16.705, and water of crystallization, 50.890. It dissolves in its weight of cold water, and in a smaller proportion of boiling water. It is insoluble in alcohol. It effloresces in the air, and melted, it experiences the watery, but not the ignited, fusion.

INCOMP. SUBST. The metallic oxides of the second class, the hydro-chlorates of baryta, of ammonia and lime, the sub-carbonates of potassa and soda, the acetate of lead, the nitrate of silver.

PREP. By evaporating the mineral waters which contain it, as is done in the case of those of the Epsom springs.

TH. E. It is used as a mild purgative, in the same cases as the preceding. It possesses exactly the same properties. It is more commonly used in England than in France.

D. & M. OF ADM. From ʒij. to ℥ij., in an aqueous menstruum.——*Mistura salina cum ferro*, GUY'S H. (Sulphates of magnesia and soda, āā ʒv.; sulphate of iron, gr.ij.; boiling water, ℔ij.) Dose, from ℥iv. to ℥viiij. two or three times a day.——*Aqua sulphatis magnesiæ cum acido carbonico*, F. (Sulphate of magnesia, 3; common water, 22; water, charged with carbonic acid, 11.)

SULPHATE OF POTASSA. *Potassæ sulphas*. Vitriolated tartar. Glazier's polychrest salt. It exists in solution in some mineral waters.

P. P. This salt is in four or eight-sided prismatic crystals, short, white, unalterable in the air; it decrepitates when thrown on live coals; is of a slightly bitter taste, and of the specific gravity of 2.4073.

C. P. It is composed, according to Berzelius, of 45 of sulphuric acid, and of 55 of potassa. It dissolves in 16 of cold and 5 of boiling water. Insoluble in alcohol. Heated, it melts above a red heat, without undergoing decomposition.

INCOMP. SUBST. The same as for the sulphate of soda.

TH. E. It is a very weak purgative, on account of its insolubility, and is therefore less employed than the preceding. However, in very small doses, it is administered with success after delivery, in order to diminish the secretion of milk, in women who do not suckle their children. It is exhibited likewise, in the same manner, in cases of obstructions of the viscera, in chronic affections of the liver, certain dropsies, &c.

D. & M. OF ADM. As a purgative, ʒiv. to ℥j., in solution. As an alterative, gr.x. to ʒj., in powder, or dissolved in an acidulated menstruum.

NEUTRAL TARTRATE OF POTASSA. ***Potassæ tartras.*** Soluble tartar. This compound does not exist in nature.

P. P. It crystallizes in four-sided rectangular prisms; it is slightly deliquescent, of a bitter and cool taste, and of the specific gravity of 1.556.

C. P. It is composed of tartaric acid 58.69, and potassa 41.31. It is soluble in its weight of cold water, and still more so in this menstruum when boiling; it is likewise soluble in alcohol. Heated, it melts in its water of crystallization, puffs up, and finally is decomposed.

INCOMP. SUBST. All the acids, even the weakest, transform it into a supertartrate. It is completely decomposed by lime-water, hydro-chlorate of baryta, the salts of lead, &c.

PREP. It is obtained by saturating with carbonate of potassa the excess of acid of the cream of tartar.

TH. E. It is a mild purgative of prompt operation, and not apt to produce colics, as many other cathartic substances do. It is frequently used in the same cases as the preceding; and in England it is occasionally associated with resinous purgatives, in order to facilitate their action.

D. & M. OF ADM. ʒij. to ℥j., dissolved in an aqueous menstruum, with or acid.

TARTRATE OF POTASSA AND SODA. ***Potassæ et sodæ tartras.*** Seignette's or Rochelle salt. It is always the product of art.

P. P. This double salt is in eight or ten unequally-sided prismatic crystals, transparent, unalterable in the air, of a slightly bitter taste, and of the specific gravity of 1.757.

C. P. It is composed of 54 of tartrate of potassa, and 46 of tartrate of soda. It dissolves in 5 parts of cold and 1 of boiling water. It is decomposed by heat, after having experienced the aqueous fusion.

INCOMP. SUBST. The same as the preceding.

PREP. It is obtained by saturating the excess of acid of the cream of tartar with carbonate of soda.

TH. E. It acts in the same manner, and is employed in the same cases as the tartrate of potassa.

D. & M. OF ADM. ℥j. to ℥jss., in an aqueous menstruum.——*Purgative saline mixture*, PARIS, H. (Tartrate of potassa and soda, ʒvj.; tartar emetic, gr.j.; syrup of honey, ℥j.; orange flower water, ʒij.; water, ℥ij.) By table-spoonful.

PHOSPHATE OF SODA. ***Sodæ phosphas.*** It exists in several animal liquids, especially in the serum of the blood; however, that which is used in medicine is always the product of art.

P. P. It is in oblong, rhomboidal crystals, or in small pearl-white, shining scales, very efflorescent, of a slightly salt taste, and of the specific gravity of 1.333.

C. P. This salt is composed of phosphoric acid, 20.41; soda, 17.88; water of crystallization, 61.71. It dissolves in three parts of cold and two of boiling water. Heated, it passes successively from the watery to the ignited fusion, and furnishes by the latter an opaque, vitreous matter, of a milky whiteness. It turns the syrup of violets green.

INCOMP. SUBST. The sulphuric, nitric, and hydro-chloric acids, lime, magnesia, and hydro-chlorate of baryta.

PREP. It is obtained by pouring an excess of sub-carbonate of soda into a solution of bi-phosphate of lime.

TH. E. It is a very gentle purgative, frequently used in France, on account of its taste being less unpleasant than the other purgative salts. It is employed to fulfil the same indications as the preceding saline substances.

D & M. OF ADM. ℥j. to ℥ij. dissolved in a proper menstruum.

PURGATIVE MINERAL WATERS.

All waters of this kind possess a bitter and salt taste, and are generally indebted for their purgative properties to the presence of a considerable quantity of the hydro-chlorates or sulphates of soda, magnesia, and lime. They contain very little carbonic acid gas, and traces only of hydro-sulphuric acid gas, variable quantities of hydro-chlorate of lime, of the carbonates of lime or magnesia, and of vegetable and animal matters, &c. The springs that furnish these waters are either warm or cold.

Administered in small doses these waters are tonic and stimulant, but in large quantities they become purgative. They are given internally in cases of gastric disorders; but are principally used in baths or shower-baths, as tonics, in certain cases of general debility, palsy, and other atonic diseases.

The purgative mineral waters mostly used, and which have the greatest repute in Europe and in America, are the following:—

EPSOM. The town of Epsom is situated in the county of Surrey, fifteen miles S.W. of London. Its waters, which are limpid, salt, and bitter, contain 0.03 of sulphate of magnesia, which is obtained by evaporation, and found in commerce under the name of *Epsom salt*. This water is used as an aperient and alterative, in the dose of from two to four tumblerfuls a day.

Balaruc, a French village in the department of Hérault. The spring is situated near a salt pond, communicating with the Mediterranean Sea. The waters of this spring have a slight sulphurous smell, and their temperature is 47.5° Centig. (113° Fahr.) According to M. Figuier 6 kilogrammes of the water contain carbonic acid, 36 cubic inches; hydro-chlorate of soda, 45.05; of magnesia, 8.25; of lime, 5.47; carbonate of lime, 7.00; carbonate of magnesia, 0.55; sulphate of lime, 4.20; and traces of iron. According to M. Pierre, a great quantity of nitrogen gas disengages from the spring.

Artificial Balaruc water, P. Water containing twice its volume of carbonic acid, 650; hydro-chlorate of soda, 6.0; hydro-chlorate of lime, 0.9; hydro-chlorate of magnesia, 2.8; and carbonate of magnesia, 0.05.

D. & M. of Adm. As a purgative drink, from 2 to 3 quarts; as a stimulant: 3 or 4 tumblerfuls a day.

Externally. In baths, lotions, water-baths, &c.

Bourbonne-les-bains, a small town of the department of Haute-Marne. There are several springs, the waters of which, when agitated, exhale a slight smell of rotten eggs; their temperature varies in the different reservoirs from 40° to 56° Centig. (from 104° to 133° Fahr.) According to M. Athenas, a quart of this water contains, hydro-chlorate of soda, 88 grains; hydro-chlorate of lime, 16; hydro-chlorate of magnesia, 3; sulphate of lime, 19; sulphate of magnesia, 7; carbonate of iron, 1-3d; besides free carbonic acid, &c.

Bourbonne-les-bains artificial mineral water, P. Water containing twice its volume of carbonic acid, 650; hydro-chlorate of soda, 4; hydro-chlorate of lime, 0.5.

D. & M. of Adm. As a drink, from 3 tumblerfuls to $1\frac{1}{2}$ quarts, gradually.

Seidlitz, a village of Bohemia, in the vicinity of Prague. The waters of this spring are limpid, sparkling, of a bitter and salt taste. Specific gravity, 1.0060. Their temperature is 15° Centig. (59° Fahr.) According to Hoffman's analysis, in five pounds they contain sulphate of magnesia, 1410 grains; sulphate of soda, $34\frac{4}{9}$; sulphate of lime, $25\frac{13}{16}$; carbonate of lime, $9\frac{11}{16}$; carbonate of magnesia, $6\frac{1}{4}$; carbonic acid, 6; and resinous matter, $3\frac{3}{4}$.

Weak artificial Seidlitz water, P. Water containing three times its volume of carbonic acid, 650; sulphate of magnesia, 8; hydro-chlorate of magnesia, 0.9.

Strong artificial Seidlitz water, P. Contains double the quantity of saline matters.

D. & M. OF ADM. As a drink, from 1 to 4 tumblerfuls in the morning.

The principal purgative mineral springs in the United States of America are the following:—

SARATOGA AND BALLSTON SPRINGS. These are situated in the State of New York, nearly in a parallel line with the Hudson River, at the distance of twenty-five miles from it. The mineral springs in this neighbourhood are very numerous. The chemical properties of all of them are very nearly alike. They contain—muriate of soda, carbonate of lime, magnesia, muriate of lime, muriate of magnesia, oxide of iron, and carbonic acid, all in variable quantities.

BEDFORD MINERAL SPRINGS, Pa. Bedford is a village situated on the great western turnpike from Philadelphia to Pittsburgh, a few miles east of the chief elevation of the Alleghany mountains. The springs, the chalybeate excepted, are located about two miles south of Bedford, in Shover's Valley, which is watered by a creek bearing the same name.

The water of these springs contains—sulphate of magnesia, sulphate of lime, muriate of soda, muriate of lime, carbonate of iron, carbonate of lime, and carbonic acid. They act as tonic, aperient, or purgative, according to the dose in which they are taken.

VEGETABLE PURGATIVE SUBSTANCES.

Family Convolvulaceæ.

JALAP. *Jalapæ radix. Convolvulus jalapa*, Lin. A plant growing in Mexico, and generally in South America.

P. U. The root.

B. C. Stem herbaceous, sarmentose, of the size of a quill, from fifteen to twenty feet long; leaves smooth on the upper surface, hairy underneath, sub-cordiform; flowers violet, pedunculate, axillary, solitary; corolla infundibuliform, with plaited borders; style filiform, stigma bi-lobed; fruit ovoid, roundish, of the size of a hazel-nut, generally four-celled, each cell containing two or three triangular seeds covered with silky hair.

P. P. The fresh root is fusiform, rounded, white and milky; that found in commerce is in slices or round pieces, compact, heavy, rough, of a dark brown externally, greyish internally, marked with concentric lines; its fracture is smooth, undulated, and intermixed with shining points; its taste is weak at first, then acrid, and it irritates the parts it touches; its odour is peculiar, and slightly nauseous. Powdered jalap is of a yellowish-brown colour, and is powerfully errhine.

C. P. According to M. Felix Cadet de Gassicourt this root contains in 500 grammes, resin, 50; gummous extract, 2[illegible]; fecula, 12.5; albumen, 12.5; lignin, 1.45; water, 24; salts, with base of potassa and lime, 14.2; silica, 2.7; carbonate of iron, 0.105; and loss, 16.995. Other analysis show that the quantity of resin, which appears to be the active principle of jalap, may vary considerably. Mr. Hume has noticed a white crystalline precipitate, which he has called *jalapine*, and which he considers as a new vegetable alkali, capable of forming salts with acids. But, according to M. Chevallier's experiments, this substance is nothing but *inuline*, and has none of the virtues of jalap. Water, alcohol, and ether, dissolve its active principles.

Th. E. The purgative action of this substance is principally spent on the small intestines. In small doses it does not gripe, and most commonly does not produce any remarkable general phenomena; in large doses, on the contrary, it causes vomiting, violent colics, and induces phlegmasia of the gastro-intestinal mucous membrane. It is considerably used, owing to its energetic action and moderate price. It is frequently combined with other purgatives.

D. & M. of Adm. *Powder*, gr.xii. to ʒss., in pills or in suspension in a pro- menstruum.——*Pulvis jalapæ compositus*, E., U. S. (Jalap, 1 part; supertart- of potassa, 2 parts.) Dose, from ℈j. to ℈ij.—P. (Jalap and scammony, āā. 1. supertartrate of potassa, 2.) Dose, from gr.xv. to ℈j.—Pol. (Jalap, 2; sul- of potassa, 1.)—F. (Jalap and gentian, āā. 4; ginger, 1; sulphate of magn- 8.)—New York H. (Jalap and calomel, āā. equal parts.) Dose, from ℈ss. to —Guy's H. (Jalap, ℥j.; tartrate of potassa, ℥ij.; red pepper, gr.xij.) D- from ʒss. to ʒj.——*Anthelmintic powder*, Paris H. (Jalap, gr.xxx.; rhu- gr.vj; calomel, gr.ij.)—Dose, from gr.xij. to ℈j.——*Dr. Paris's purgative po-* (Jalap, gr.xv.; ipecacuanha, gr.v; essential oil of cinnamon, gutt.ij.) For a dose. ——*Pilulæ jalapæ compositæ*, U. S. (Jalap, rhubarb, and Castile soap, āā. sub-muriate of mercury, ʒvj. and ℈ij.; tartarized antimony, gr.xxviij.)— *Paris's purgative bolus.* (Jalap, gr.xv.; calomel, gr.v.; conserve of roses, q. For a bolus.——*Extractum jalapæ*, L., E., D., U. S. Dose, from gr.x. to ℈j.— *Tinctura jalapæ*, L., U. S. (Jalap, ℥viij.; alcohol, Oij.) Dose, from ʒss. to —E. (Jalap, 1; alcohol, 5.) Dose, from ʒj. to ʒiv.—D. (Jalap, ℥v.; r- spirit, Oij.)—B. (Jalap, 1; alcohol, 6.) Dose, from ʒss. to ʒiij.——*Tinctura ca- thartica*, Den. (Jalap, 1; seneka, 4; alcohol, 72; sugar, 8.)——*Eau de vie - mande*, P. (Jalap, 8; turpeth root, 1; scammony, 2; alcohol, 96.) Dose, ℥ss. to ℥j., in an emulcent drink.)——*Syrup of jalap*, P. (Jalap, 20; coria- and fennel seeds, āā. 1; water, 200; sugar, 400.) Dose, from ʒij. to ℥ss.

Resin of Jalap. *Resina jalapæ*, is obtained from the above described root. It is of a greenish brown colour, brittle, of shining fracture, of a virose smell, of a taste slightly perceptible at first, then acrid and unpleasant. Its action is much more energetic than that of jalap, of which it seems to be the active principle. It is administered in similar cases as the root, which is, however, generally preferred to the resin on account of its more certain and milder action. The dose is from gr.ij. to x. in pills, or suspended in an emulsion.

Aleppo Scammony. *Gummi-resina scammonium.* A gum resin obtained from the *Convolvulus scammonia*, Lin. A perennial plant growing in Asia.

B. C. Root elongate, fleshy, lactescent; stem slender, hairy, from four to five feet high; leaves alternate, hastate, smooth, entire, flowers red, from three to six on the ramifications of an axillary peduncle.

P. P. This substance is found in commerce in masses of moderate size, of a deep grey colour, and friable; its fracture is dull and opaque, its odour is strong and peculiar, its taste bitter, acrid, and its specific gravity, 1.235.

C. P. According to Messrs. Bouillon-Lagrange and Vogel, it is composed of resin, 60; gum, 3; extractive, 2; impurities, 35. It is soluble in alcohol. Triturated with water, it forms a sort of emulsion of a dirty greenish-yellow colour, in which one-fourth of the resin appears to be dissolved.

Th. E. Scammony is a very energetic drastic purgative, acting quickly. On account of the lively irritation it produces on the mucous surface of the intestines, it is proper to administer it only in small doses. It is exhibited in cases of obstinate costiveness, produced by atony of the intestinal canal, and especially in passive dropsies, in order to provoke copious alvine evacuations.

D. & M. of Adm. *Powder*, gr.j. to vj. and gradually to xij. and xv.——*Pulvis scammonii comp.*, L. (Scammony and extract of jalap, āā. 4; ginger, 1.) Dose, from gr.x. to xv.—E., U. S. (Scammony and tartrate of potassa, āā. equal parts.) Dose, from gr.x to ʒss.——*Pulvis scammonii cum hydrargyro*, Guy's H. (Scammony, ʒij.; calomel and sugar, āā. ʒj.) Dose, from gr.x. to xx.——*Dr. Paris's purgative powder.* (Scammony, gr.v.; rhubarb, gr.xv.; sub-carbonate of ammonia, gr.vj.) For a dose, to be taken in a suitable menstruum.——*Purgative emulsion*, P. (Scammony, 1; sugar and orange-flower water, āā. 12; simple emulsion, 80.) Dose, from ℥ij. to iv.——*Compound scammony and senna lozenges*, P. (Scammony, 6; senna leaves, 9; rhubarb, 3; cloves, 2; preserved lemon peel, 16; sugar, 108; for lozenges of six drachms each.) Dose, from ʒj. to ʒij.——*Contio scammonii*, L. (Scammony, ℥jss.; cloves and ginger, āā. ʒvj.; essential oil of caraway seeds, ʒss.; sugar, q. s.)—U. S.——*Electuarium scammonii*, D. (Scammony and ginger, āā. ℥j.; oil of cloves, f℈j.; syrup of orange peel, a sufficient quantity.) Dose, from ʒss. to ʒj.——*Tinctura*, P. (Scammony, 1; alcohol, 4.) Dose, from ℈j. to ʒj. in any menstruum.——*Syrupus*, P. (Scammony, 1; sugar and violet syrup, āā. 8; alcohol, 16; one ounce contains eighteen grains of scammony.) Dose, from ʒj. to ʒiv.

Smyrna Scammony is furnished by the *Periploca secamone*. Lin., a sarmentose shrub of the family *Apocyneæ*, growing in the same places as the *Convolvulus scammonia*. It is heavier, less brittle, of a deeper colour, and more disagreeable odour than the preceding. It contains only twenty-nine per cent. of purgative resin; the remainder consists of gummous matter and impurities. It is consequently much less active and less valuable than the Aleppo scammony.

The **Spurious Scammony**, or **Montpellier Scammony**, is obtained from the *Cynanchum monspelliacum*, Lin., a small shrub of the family *Apocyneæ*, growing abundantly in the vicinity of Montpellier. It is in flat pieces, almost black, very hard, compact, of a dull fracture, and its smell is not unpleasant. It is now almost out of use, owing to the uncertainty of its action.

Mechoacan. *Mechoacannæ radix. Convolvulus mechoacan*, Lin. A plant growing in Mexico, in the province of Mechoacan.

P. U. The root.

P. P. This substance is in irregularly globular pieces, of various size, or in circular slices two or three lines thick, and stripped of their bark. It is of a white colour inside, inodorous, and of taste hardly sensible at first, but afterwards slightly acrid.

C. P. Mechoacan contains a considerable quantity of fecula, a very bitter, oily principle, soluble in alcohol, resembling much the resin of jalap.

Th. E. It is a weak and uncertain purgative, once much used, but now almost forgotten. It enters, however, into the composition of some officinal preparations, which are employed occasionally.

D. & M. of Adm. *Powder*, ℈j. to ʒj.

Wild Potatoe. *Convolvulus panduratus*, Michaux. A perennial plant, native of North America, very common in sandy fields, and among bushes.

P. U. The root.

B. C. Root very large and oblong; stem pubescent, long, slender, and twining; leaves petiolate, cordate, entire or lobate, and panduriform; flowers two or three, on axillary and solitary peduncles, longer than the petioles; calix short, glabrous; corolla large, infundibuliform, almost campanulate, white, with a purple bottom forming a star on the white border.

P. P. Very large, sometimes of the size of a man's arm, an-more than two feet long, covered with a brown skin, white inside, milky when fresh, and of an acrid taste.

C. P. It contains a large quantity of starch.

Th. E. This root has been used in place of jalap, with the same beneficial effect, but rather in a less degree; it seems to possess some hydragogue properties, and has been highly recommended in some parts of the United States, in cases of gravel. It is used either in powder or in decoction.

Turpeth. *Turpethi radix. Convolvulus turpethum,* Lin. A perennial plant, nearly related to the preceding, and growing in the East Indies.

P. U. The root.

P. P. Turpeth is in pieces of the length of the finger, compact, of a brownish-grey colour externally, whitish internally, with dark resinous streaks. The heart is frequently wanting, leaving but a hollow tube formed by the bark, which is very thick. By cutting this root transversely, it shows a multitude of small round holes, which gives to it the appearance of a bamboo stem. Its taste is nauseous, and its smell rather feeble.

C. P. This substance, like the preceding, contains resin, a fatty matter, a volatile oil, albumen, and fecula. Alcohol takes up its active properties.

Th. E. It is a very energetic drastic purgative, but its action is uncertain. It was formerly used in the same manner as jalap; it is now no longer employed. It enters, nevertheless, into the composition of some officinal preparations.

D. & M. of Adm. Powder, gr.x. to ℈j. Decoction, ʒj. to ʒij. to ℔j. of water, and administered by tumblerfuls until it operates.

Soldanella. *Convolvulus soldanella,* Lin. A plant, growing on the sea shore, in many parts of Europe, the *C. sepium, C. arvensis,* Lin., and several other plants of the same family, contain a purgative resin similar to that of jalap; and, according to Messrs. Loiseleur, Deslongchamps, and Chevallier, they might be used with advantage as substitutes for the exotic purgative *Convolvuli.*

Family Podophylleæ.

May Apple. Mandrake. *Podopyhllum peltatum,* Lin. A native plant of North America, exceedingly common in rich and shady woods.

P. U. The root.

B. C. Stem from one foot to eighteen inches, upright, simple, and smooth, supporting two large leaves and a single flower in the fork formed by the junction of the petioles; leaves peltate, palmately divided, mostly into six large lobes, attenuated towards the bottom; flowers white; calix, three-leaved; nine concave petals; stigma crenate, sessile; capsule superior, one-celled, many-seeded, and becoming an ovate berry; fruit, lemon colour, at first nauseous; the internal pulp, when mature, is agreeably sub-acid and edible.

P. P. Root creeping, very long; when dried, it is hardly larger than a goose-quill, of a reddish-brown colour externally, and whitish internally, brittle, having a slight nauseous smell, and a sweetish taste. The smell of the powder is nearly similar to that of ipecacuanha.

C. P. This root contains resin, starch, and a peculiar vegetable substance crystallizable in very white silky tufts. Its infusion reddens litmus in a very complete manner. Like jalap, its cathartic property resides chiefly in the resin.

Th. E. As a cathartic, this root is hardly inferior to jalap; it does not seem, however, to act as promptly, but its action lasts longer. It produces more distressing sickness at the stomach than purgatives generally, and very frequently causes emesis. It has been highly recommended in cases of intermittent and remittent fevers, in dropsy, and as an anthelmintic; it is used with much effect by the Indians. The leaves are said to be poisonous.

D. & M. of Adm. Powder, from gr.xv. to ℈j. Infusion, from gr.xxx. to ʒj in boiling water; f.ʒiv. for a dose.——*Extractum podophylli*, U. S. Dose, from gr.x. to xx.

Family Cucurbitaceæ.

Colocynth. Coloquintida. Bitter Apple. *Colocynthidis fructus*. *Cucumis colocynthis*, Lin. An annual plant, native of the Levant, and cultivated in gardens.

P. U. The pulp of the fruit.

B. C. Stem fleshy, covered with rough hair, scandent and cirrhose; leaves heart-form, five-lobed, the nerves covered with stiff hair; flowers monoicous, solitary, of an orange yellow; fruit globular, yellow, of the size of an orange, furnished with a thin and rough peel, containing a white pulp; seeds, oval, flattened, white, and very numerous.

P. P. Colocynth, such as is found in commerce, is in white, round, spongy, dry, and light masses, in the pulp of which are placed the seeds. Its taste is nauseous and extremely bitter; it has scarcely any smell.

C. P. According to M. Vauquelin this substance contains a resinoid matter, more soluble in alcohol than in water, which he calls *colocyntine*, and which is the active principle; another resin, insoluble, and not bitter; a fatty oil, gum, an extractive matter, and salts. Water, alcohol, and ether, dissolve easily its active principles.

INCOMP. SUBST. Fixed alkalies, sulphate of iron, nitrate of silver, acetate of lead, &c.

TH. E. This substance irritates powerfully the parts with which it comes in contact. Administered internally, its action is principally felt by the stomach and rectum; and when the dose is too great, it produces a violent irritation of these organs. Even in small doses it proves one of the most energetic drastic purgatives we possess. Its action is frequently attended with violent colics, thirst, and, occasionally, with vomiting and bloody evacuations. Its irritant influence upon the rectum may be extended to the uterus, and thus promote the menses. Colocynth is exhibited with advantage in passive dropsies, and on every occasion when a powerful revulsion upon the large intestine is indicated. In these cases it is to be mixed with eight or ten grains of inert and insoluble powder, in order to diminish its very irritating action on the stomach.

D. & M. OF ADM. Powder, gr.iv. to xij., and even ℈j. at most, mixed with gum Arabic, fecula, or other inert powder.——*Decoctum colocynthidis*, B. (Colocynth, and sulphuric ether, āā. 1; boiling water, 48; syrup of orange peel, 8.) Cochl. j.; two or three times a day.——*Extractum colocynthidis*, L., P., POL., F., PR. Gr.iv. to xij., in pills, united with calomel, or other purgative substances.——*Extractum colocynthidis compositum*, L., U. S. (Colocynth, ʒvj.; socotorine aloes, ℥jss.; scammony, ℥ss.; cardamom, ʒj; diluted alcohol, one pint.) —L., D. (Pulp of colocynth, 6; aloes, 12; scammony, 4; cardamom seed, 1; hard soap, 3; proof spirit, L.; water, D., 128; reduce to a proper consistence. ——*Pilulæ colocynthidis compositæ*, F. (Extract of colocynth, 15; calomel, 6; resin of jalap, 4; cloves, 2; syrup, q. s.; for three grain pills.—E. (Aloes, and scammony, āā. 8; colocynth, 4; sulphate of potassa, oil of cloves, āā. 1; mucilage of gum Arabic, q. s.) – D. (Colocynth pith, ℥ss.; aloes and scammony, āā. ℥j.; Castile soap, ʒij.; oil of cloves, ʒj.; syrup, q. s.)——*Pilulæ colocynthidis extracti compositi*, U. S. (Compound extract of colocynth, ʒjs.; oxide of antimony, ʒss.; for 30 pills.)——*Pilulæ colocynthidis cum hydrargyro*, GUY'S H. (Compound extract of colocynth, ʒiv.; calomel, ʒj.; for 60 pills.) Dose, from No. j. to iv.——*Tinctura colocynthidis*, A. (Colocynth, 1; alcohol, 6.)—F., POL., PR., B. (Colocynth, 8; star-aniseed, 1; alcohol, 112.) Dose, from gutt.x. to xv., in a mixture.

ELATERIUM. *Elaterii fructus. Ecbalium elaterium*, Rich. *Momordica elaterium*, Lin. A perennial plant, growing in the south of France.

P. U. The juice of the fruit.

B. C. Stem repent, ramose, hairy; leaves thick and cordiform; flowers monoicous, yellowish, in axillary spikes; fruit ovoid, elongate, of the size of the thumb, green, and covered over with rough hair; on getting ripe, these fruits separate from their peduncle by the least touch, and dart to a great distance, through the opening practised by the separation of the pedicle, the seeds they contain.

P. P. Elaterium is found in commerce in irregular, dry, and friable fragments, of a blackish-green colour; or in thin, hard scales, bearing on the surface the impression of the linen on which they have been dried; they are of a greenish colour, almost inodorous, and of an acrid and bitter taste. This latter kind is much more active than the former.

C. P. This substance, according to Dr. Paris' analysis, contains *elatine*, united to a very bitter principle, 12; extractive, 26; fecula, 28; gluten, 5; water, 4; and lignous fibres, 25. Water and alcohol especially dissolve its active princples.

Elatine, for the discovery of which we are indebted to Dr. Paris, is the active principle of elaterium; the experiments of this physician leave no doubt upon the subject. This substance is soft, of a green colour, of an aromatic smell, of a weak taste, soluble in alcohol and alkalies, and insoluble in water.. It operates powerfully in minute doses; but it is not generally used.

Prep. The first kind of the above described elaterium is obtained by evaporating, to the consistence of a dry extract, the juice expressed and clarified. The second is prepared by separating the sediment which forms in the juice obtained from the fruit by incision, and without expression, and drying it upon linen with a gentle heat.

Th. E. It is one of the most violent drastic purgatives; administered inconsiderately, it produces a very lively inflammation of the intestinal canal, attended with the most serious accidents. In minute doses, it purges violently, and is applicable in cases requiring very copious evacuations, as in the treatment of passive dropsies, especially in ascites and hydrothorax. It was once very much used, but is now, in France, almost entirely abandoned; but it is still used very frequently in England as one of the best and most powerful hydragogues. However, its administration requires the greatest caution.

D. & M. of Adm. Powder, gr.$\frac{1}{8}$, every hour until it operates, in pills, or suspended in a demulcent mixture. The dose must not be carried above gr.vj. or [illegible] ——*Extractum elaterii*, L. Same doses.——*Pulvis elaterii compositus*, Guy's [illegible] (Extractum elaterii, gr.iv., tartrate of potassa, ℈v.; ginger, ℈j.; 30 grs. contain [illegible] gr. of elaterium.) Dose, from gr.v. to x.

Bryony. *Bryoniæ radix*, *Bryonia alba*, Lin. A native perennial plant, growing in hedges and uncultivated places.

P. U. The root.

B. C. Stem herbaceous, climbing, ramose, from eight to ten feet long; leaves alternate, emarginate, and five-lobed; flowers dioicous; male, five stamina. [illegible] male, ovary globular, style short, trifid, three transversal stigmas; fruit, a [illegible] form and reddish berry, containing from three to six seeds.

P. P. The fresh root of this plant is fusiform, frequently of a considerable size, covered with a yellowish, thick, and transversely furrowed bark. Its parenchyma is compact, whitish, and divided into zones. Its taste is bitter and nauseous, and its smell viscous and unpleasant. This root is found in commerce in a dry state, cut in large slices, white, and presenting very apparent, concentric striæ; its smell is much stronger in the fresh than in the dry state.

C. P. This root, according to M. Dulong, contains *Bryonine*, a considerable quantity of fecula, a green concrete oil, resin, gum; and salts with base of lime and potassa. Water and alcohol dissolve its active principles.

BRYONINE is pulverulent, and presents rudiments of crystals. It is soluble in water, and possesses the disagreeable taste of bryony root. According to Mr. Brande it is reddish, intensely bitter, and soluble in alcohol. To this immediate principle the bryony is indebted for its action.

TH. E. Applied to the skin the fresh root produces a very strong rubefaction, and even vesication. Administered internally, in strong doses, it acts like the irritant poisons, and occasions vomiting and copious and frequently bloody alvine evacuations. In small doses it was formerly employed as a purgative and an emetic; but it is a dangerous and uncertain remedy, the exhibition of which is now almost entirely abandoned.

D. & M. OF ADM. Powder, gr.xij. to ℈j., and even ʒss. Decoction, ʒiv. to ℥j. to ℔j. of water.——*Medicinal fecula of bryony*, P. Dose, from gr.xij. to ʒss.——*Expressed juice of the fresh root*. Dose, from ʒii. to ʒiv.

Family Liliaceæ.

ALOES. *Succus aloes*, inspissated juice of the leaves of several species of the genus *Aloe*, especially of the *Aloe perfoliato*, Lam., and *A. spicata*, Lin. Perennial plants growing in Africa, in in the vicinity of the Cape of Good Hope, and cultivated in Barbadoes, &c.

B. C. Root fibrous; stem or scape two or three feet high, covered with sharp scales; leaves thick, succulent, from eight to ten inches long, of a green-glaucous colour, crowded at the base of the stem; flowers red, in an elongated spike, hanging, tubular; calix cylindrical; six stamina, adherent to the base of the calix; style terminated with a trilobed stigma.

P. P. We find in commerce three different species of aloes, designated by the name of *socotorine*, *hepatic*, and *caballine aloes*.

The *Socotorine aloes*, *Aloe socotorina*, is in deep brown pieces, friable, with a resinous and shining fracture, of a peculiar aromatic odour, and of a very bitter taste. Its powder is of a very brilliant golden yellow. It is the purest of the three species.

The *Hepatic* or *Barbadoes aloes*, *Aloe hepatica*, is distinguished by its deep red colour, more compact texture, a duller fracture, and by its smell being nearly similar to that of gum myrrh. Its powder is of a dull reddish-yellow colour.

The *Caballine aloes*, *Aloe caballina*, which is very impure, and employed only in veterinary practice, is of a dark colour, quite opaque, of a rough and very compact fracture, of an unpleasant and fetid smell.

C. P. The socotorine aloes, according to Tromsdorff, is composed of bitter saponaceous principle, 75; resin, 25; and a trace of gallic acid; it seems to contain besides a small quantity of essential oil. It is partly soluble in cold, and completely so in boiling water, from which it separates on cooling. It dissolves likewise in alcohol. The hepatic aloes, according to the same chemist, contains saponaceous principle, 81.25; resin, 6.25; albumen, 12.50; and a trace of gallic acid. Water, either cold or warm, do not dissolve it completely.

PREP. The socotorine aloes is obtained by cutting the leaves at their base, and keeping them in a vase with the cut side downwards. The yellowish liquor they have furnished is then collected together and evaporated in the sun or over a gentle fire. The quantity obtained by this process is very small but very pure. Most commonly, the three different species of aloes are prepared by a single operation. The leaves are bruised, the juice expressed from them, and the grounds boiled in water. The decoction is then strained off and mixed with the juice already obtained. This liquor, after having previously undergone a coarse filtration, is evaporated to the consistence of an extract, and afterwards poured into tubs. The superior layers furnish the purest, or socotorine aloes; the middle one, the hepatic; and the inferior strata constitute the black or caballine aloes.

TH. E. In small doses, aloes acts on the stomach in the same manner as the tonic bitters; it stimulates the action of this organ, and promotes digestion. In larger doses, it proves an energetic purgative; but its effects occur only some time after its ingestion, because its action is principally spent upon the large intestine, which it may so far irritate as to produce a real congestion. It is used with success in cases of habitual costiveness, proceeding from an atonic state of the intestines canal; in jaundice, chlorosis, scrofulous affections, hypochondria, and, generally, whenever a slow purgative effect is required, and a secondary tonic action is desirable. Advantage is taken of its well known action on the rectum, to maintain in this viscus a slight irritation, in persons inclined to cerebral congestions; and this same action, which may be extended to the uterus, is frequently very useful in promoting the return of the menses. Its administration is contra-indicated in individuals affected with piles; for, from what we have said of its action on the rectum, it is evident that it must aggravate the symptoms of this disease. Finally, it has been recommended as anthelmintic; but its effects in this respect are so questionable, that it cannot be exhibited with any certainty of success.

D. & M. of Adm. Powder, as a tonic, gr.j. to gr.iv.; as a purgative, gr.vj. to ℈j.——*Decoctum aloes compositum*, L. (Aloes, myrrh, and saffron, āā. 3; subcarbonate of potassa, 2; extract of liquorice, 12; compound tincture of cardamom, 96; water, 288.) Dose, from ℥j. to ℥ij. in the morning.——*Pulvis aloes compositus*, L., D. (Aloes, 3; resin of guaiacum, 2; aromatic powder, 1.)——*Pulvis aloes cum canella*, D., U. S. (Hepatic aloes, 4; canella alba, 1.) Dose, from gr.x. to gr.xx.——*Pilulæ aloeticæ*, E., U. S., P. (Aloes and soap, equal parts; water or simple syrup, q. s.) Dose, from gr.x. to xv.—Guy's H. (Aloes, ʒiij.; medicinal soap, ʒj.; oil of peppermint, gutt.x.; for sixty pills.) Dose, from No. ij. to No. iv. a day.——*Pilulæ aloes et colocynthidis*, U. S. (Socotorine aloes, scammony, āā. ℥ij.; sulphate of potassa, ʒij.; colocynth, ℥j.; oil of cloves, f.ʒij.)——*Pilulæ aloes cum myrrha et guaiaco*, U. S. (Socotorine aloes, ℥ss.; saffron, myrrh, āā. ʒij.; gum guaiacum, oxide of antimony, āā. ℥ss.——*Pilulæ aloeticæ*, New York H. (Socotorine aloes, ʒvj.; ginger, ʒiv.; mucilage of gum Arabic, q. s.; for pills, No. cxx.——*Pilulæ aloeticæ compositæ*, New York H. (Spanish soap, aloes, pulverized rhubarb, āā. ℥j.; mucilage of gum Arabic, q. s., for five grain pills.)——*Pilulæ aloes compositæ*, L., B. (Aloes, ℥j.; extract of gentian, ℥ss.; essential oil of caraway, ♏xl.; simple syrup, q. s.)——*Pilulæ aloes cum zingibere*, D. (Hepatic aloes, ℥j.; ginger, ʒj.; medicinal soap, ℥ss.; oil of peppermint, f.ʒjss.) Dose, from gr.x. to xv.——*Pilulæ aloes cum myrrha*, formerly *Pilulæ rufi*, L., E., D., U. S., P., B., Guy's H. (Aloes, 4; myrrh, 2; saffron, 1; simple syrup, q. s.) Dose, as a cathartic, from ℈j. to ℈ij.; as a stimulant, from gr.x. to ℈j.——*Pilulæ aloes et cinchonæ*, P. (Aloes, 6; extract of bark, 3; cinnamon, 1; syrup of wormwood, q. s.) Dose, from gr.vj. to gr.xij.——*Fuller's holy pills*, P. (Aloes, 8; senna and myrrh, āā. 4; assafœtida and galbanum, āā. 2; saffron and mace, 1; sulphate of iron, 12; oil of succin, q. s.; mugwort syrup, 48; for four-grain pills.) Dose, No. ij. twice a day.——*Bontius's hydragogue pills*, P. (Aloes, gamboge, and gum ammoniac, āā. e. q.) Dose, from gr.xij. to gr.xviij.——*Pilulæ aloes assafœtidæ*, E. (Aloes, assafœtidæ, and medicinal soap, āā. e. q.) Dose, gr.x. twice a day.——*Aloetic pills*, Paris H. (Socotorine aloes, ℈j.; tartar emetic, gr.iij.; extract of gentian, ʒss.; for twenty pills.) Dose, No. j. every night.——*Pilulæ aloes cum ferro*, Guy's H. (Aloes, ʒjss.; gum myrrh, ʒij.; extract of gentian and sulphate of iron, āā. ʒj.; water, q. s., for four-grain pills.) Dose, No. ij. to No. iv. twice a day.——*Purgative pills*, Dr. Paris. (Aloes and mercurial pills, āā. ℈j.; for six pills.) Dose, No. ij. every night.——*Compound aloes electuary*, or *Hiera picra*, P. (Socotorine aloes, 16; cinnamon, mace, asarabacca, saffron, and mastich, āā. 1; honey, 64.) Dose, from ℈j. to ʒj.——*Mesenteric electuary*, P. (Aloes, calomel, and arum, āā. 2; gum ammoniac and iron filings, āā. 4; senna, 6; powder of *tribus* and rhubarb, āā. 3.) Dose, from ʒss. to ʒij.

Extractum aloes, P., L., Pol., Pr., Den. Dose, from gr.vj. to gr.xij. in pills.——*Extractum aloes compositum*, Guy's H. (Aloes, ℔j.; ginger, ℥vj.; sub-carbonate of soda, ℥ij.; boiling water, ℔viij.) Dose, from gr.x. to gr.xx. pills.

Tinctura aloes, P., A., B. (Aloes, 1; alcohol, 6.) Dose, from gutt.x. to in a proper menstruum.—L., D., E., U. S.——*Tinctura aloes aquosa*, B. (Al 1; extract of liquorice, 3; water, 32; alcohol, 8) Dose, from ℥ss. to ʒj.—*Tinctura aloes ætherea*, E. (Aloes and myrrh, ℥jss.; saffron, ℥j.; spirit of sul-phuric ether, ℔j.)——*Tinctura aloes composita*, NEW YORK H., L., D. (Ext of aloes and saffron, ā̄ā. ℥iij.; tincture of myrrh, Oij.) Dose, from ʒj. to ʒij.—*Tinctura aloes et myrrhæ*, formerly *Elixir proprietatis*, E., U. S. (Myrrh, alcohol, Ojss.; water, Oss.; socotorine aloes, ℥jss.; saffron, ℥j.) Dose, from to f.ʒij.——*Tinctura aloes composita*, *Baume de vie de Lelièvre*, P. (Aloes gentian, saffron, rhubarb, cinnamon, white agaric, ā̄ā. 1; treacle, 2; sugar-ca 8; alcohol, 512.) Dose, from ʒj. to ʒiv.——*Vinum aloes*, D. (Aloes, ℥iv.; ca-nella alba, ℥j.; Spanish wine, Oiij.; alcohol, ℔j.—L. (Aloes, ℥viij.; canella ℥ij.; proof spirit, distilled water, ā̄ā. Oiv.) U. S.——*Vinum aloes socotorinæ.* (Aloes, ℥j.; lesser cardamom and ginger, ā̄ā. ʒj.; Spanish wine, Oj.) Dose, tonic, ʒj. to ʒij.; as purgative, ℥j. to ℥ij.

Externally. *Unguentum aloes cum petroleo*, B. (Aloes, 2; ox gall and pe-leum, ā̄ā 3; axungia, 24.)——*Unguentum terebinthinæ aloeticum*, POL. (Tinc of aloes, 3; honey, 4; Venice turpentine, 6; the yolks of two eggs.)

Family Guttiferæ.

GAMBOGE. *Gummi resina gutta* seu *Cambogia*. A gu-resin furnished by the *Stalagmitis cambogioides*, Murray: tree, native of the East Indies, and growing especially in Ceylon and in the peninsula of Camboia.

B. C. Trunk of a middle height; leaves opposite, oval, shining, tough, of deep green colour; male flowers, in distinct bunches; the hermaph axillary; calix, four-divided; corolla, four petals, about thirty stamina; fru globular, whitish, or pink berry, containing several elongate and triangular se

P. P. Gamboge is found in commerce in cylindrical masses of various sizes, of a yellowish-brown externally, of a reddish-yellow colour internally, friable, with a shining fracture, of slight taste at first, then acrid, inodorous, and of a speci gravity of 1.221.

C. P. It seems to be composed of 20 of gum and 80 of resi It is very soluble in water, alcohol, and ether, which it colou yellow, and also in volatile oils, and in a strong solution ammonia and potassa, to which it imparts an orange re colour. Heated, it melts, and burns at a high temperatu with a white flame, leaving a light and spongy coal.

PREP. It is obtained by making incisions in the bark of th tree, and breaking the leaves and young shoots. The milky juice concretes, and is formed in masses.

TH. E. This substance, being a very energetic drastic pur-gative, irritates powerfully the intestinal canal; indeed, it very often induces colics and vomiting, and, administered in to large doses, it produces a lively inflammation of the stoma and intestines. It is, however, exhibited with advantage cases in which a powerful derivation is indicated, in certain cases of dropsies, and chronic cutaneous affections. It is frequently used by English practitioners, whilst it is very seldom employed in France. It may also be administered as an anthelmintic. The Italian physicians consider it as a powerful contra-stimulant.

D. & M. OF ADM. *Powder*, gr.vj. in pills, or in an emulsive draught.——*Gamboge powder*, Dr. PARIS. (Gamboge, gr.iij.; sugar, ℈j.) Taken every three hours, until it operates.——*Pilulæ gambogiæ et scammoniæ*, U. S. (Gamboge, ℥j.; scammony, ℥ss.; nitrate of potassa, ʒj.; Castile soap, ʒij.) For four hundred pills.——*Pilulæ cambogiæ compositæ*, L., E. (Gamboge, ʒj.; extract of aloes, ʒjss.; ginger, ʒss.; comp. powder of cinnamon, ʒj.; medicinal soap, ʒij.) Dose, from gr.x. to ℈j.——*Bolus cambogiæ*, GUY's H. (Gamboge, gr.x.; tartrate of potassa, gr.xx.; ginger, gr.iij.; simple syrup, q. s.) For a bolus. Dose, No. j. a day. ——*Dr. Paris's cathartic pills*. (Compound gamboge pill, and compound extract of colocynth, āā. gr.xv.; calomel, gr.x.; ginger syrup, q. s.; for 12 pills.) Dose, No. ij. a day.

Family Colchiceæ.

MEADOW-SAFFRON. *Radix colchici. Colchicum autumnale*, Lin. A native plant, very common in wet meadows, and flowering in September.

P. U. The bulb and seeds.

B. C. Stem very short; leaves lanceolate, shining, terminated towards the base in a sheath, presenting a tuft of leaves appearing only during the winter; flowers large, purple, calix, with a very long tube, and a campanulated limb; stamina, inserted on the upper part of the tube; fruit, an ovoid, elongate, and trifid capsule, bearing three deep furrows, and containing seeds covered with arils.

P. P. The bulb of colchicum, such as is found in commerce, is ovoid, of the size of a walnut, compressed on one side, convex on the other, of a compact and white tissue, of a yellowish colour, and marked externally with uniform furrows, of a strong and unpleasant smell, of an acrid and nauseous taste, much stronger than that of the fresh bulb, which is enveloped in a sort of brown tunic, and contains a very acrid and milky juice; seeds small, almost round, wrinkled, of a brown colour, excessively tough; taste hardly perceptible at first, but very acrid afterwards.

C. P. This substance, according to Messrs. Pelletier and Caventou, contains some *veratria*, combined with gallic acid, a peculiar fatty matter, gum, starch, inulin and woody fibres. Vinegar, wine, and alcohol, are the best solvents of this article.

TH. E. The effects of colchicum vary considerably according to the dose in which it is given. In small doses, it seems, from the observations of several English practitioners, to act rather as a sedative, than as an irritant; consequently, they often administer it successfully in this manner, to soothe excruciating pains produced by gout or acute rheumatic affections. In large doses, on the contrary, this substance proves excessively irritating, and produces copious alvine evacuations, frequently attended with colics, vomiting, and all the other symptoms of gastro-intestinal inflammation. Exhibited in moder doses, colchicum becomes an energetic purgative, and its action operates likewise upon the urinary organs, the activity which it increases considerably; indeed, it has for this rea been ranked by several authors among the diuretic substan next to the squill, to which it is very nearly related as to modus operandi. It is employed as a drastic, in cases of hydrothorax, anasarca, violent gouty and rheumatic pains, &c. This very active substance, frequently exhibited in England, very little used on the continent. However, Drs. Cloq and Godard have lately called the attention of practitioners to it, by the many advantages they have obtained from administration in chronic rheumatic affections. These physicians have exhibited the tincture, and they have obser that the tincture prepared from the seeds of the plant is active than that from the bulbs in the proportion of three five.

D. & M. OF ADM. *Powder*, gr. 1 to 4 in pills.——*Tinctura colchici*, P. chicum, 1; alcohol, 4.) Dose, from gutt.xv. to xxv. in a mixture.)——*D strong's tincture of colchicum*, P. (Colchicum, 1; alcohol, 2.) Dose, from to xx.——*Vinum colchici*, U. S. (Fresh meadow saffron, 1 part; wine, 2 —L. (Bulb of colchicum, ℥ij.; proof spirit, f.℥xij.; distilled water, f.℥xx.——*Dr. Thomson's formula for the preparation of the wine of colchicum.* (B colchicum, sliced transversely, and dried without heat, ℥jss.; pulverize the pour upon the powder, 12 ounces of good sherry wine, agitate the mixture day for seven days and then filter for use.)—P. (Colchicum, 1; Malaga wine, Dose, from ℈j. to ʒss. and more progressively in a mixture.——*Vinum* GUY'S H. (Fresh colchicum, ℥xxvj.; wine, ℔ijss.; alcohol, ℥ij.) Dose, gutt.xxx. to cxx., once or twice a day.——*Wine of colchicum seeds*, P. (Rip chicum seeds, 1; Spanish wine, 8.) Dose, from gutt.xx. to xxx. and above, dually.—L. (Colchicum seeds, 1; sherry wine, 16.)——*Acetum colchici*, L. (Fresh colchicum and alcohol, āā. ℥j.; acetic acid, 0j.) Dose, from gutt.xxx xxxvj., in a mucilaginous menstruum.——*Oxymel of colchicum*, D., B. (Vin of colchicum, 1; honey, 2.) Dose, from ʒij. to ℥j., gradually, twice a day in sweetened drink.——*Dr. Paris's diuretic mixture.* (Oxymel of colchicum, acetate of potassa, ʒj.; compound spirit of juniper, ℥ss.) To take twice a ——*Honey of colchicum*, P. (Colchicum, 1; water, 24; honey, 12.) Dose, ℥ss. to ℥j. and more.——*Syrupus colchici*, E. (Vinegar of colchicum, 4; suga Dose, from ʒij. to ℥j.

WHITE HELLEBORE ROOT. *Veratrum album*, Lin. A plant belonging to the same family as the preceding article, and native of the mountains of Jura, in Auvergne, and of the Alps. It is in the form of a truncated cone, two or three inches lo one inch thick, frequently furnished with numerous radicles. It is white inside, black and wrinkled outside; of a sweetish taste at first, then acrid and corrosive. It contains *veratria*, and acts as a violent drastic. It was formerly employed as a hydragogue in passive dropsies; it is now almost obsolete. It is occasionally used externally, as an ointment, or decoction, in cases of psora, and other cutaneous affections.

CEVADILLA. *Veratrum sabadilla*, Retz. The seeds of this plant, a native of Mexico, were formerly administered as an anthelmintic. They contain a considerable quantity of *veratria*, and their very dangerous and uncertain action has caused them to be abandoned for internal use. In a pulverized state, they are occasionally used to destroy vermin; but this application to the head may be attended with vertigo and other alarming symptoms.

VERATRIA. An alkaline vegetable substance, discovered by Pelletier and Caventou in the seeds of the Cevadilla, and in most plants of the family *Colchiceæ*.

P. P. It is pulverulent, white, inodorous, but producing violent sneezing when it penetrates into the nasal passages; of a very acrid taste, promoting salivation.

C. P. According to Messrs. Pelletier and Dumas, it contains carbon, 66.75; oxygen, 19.60; hydrogen, 8.54; and nitrogen, 5.04. It is very little soluble in cold water; it dissolves, however, in 1000 of this menstruum when boiling, and in alcohol, but is less soluble in ether. It possesses alkaline properties, and forms with the acids neutral salts, which do not crystallize, but acquire by evaporation the appearance of gum. Heated, it melts at 50° Centig. (122° Fahr.), and is decomposed at a high temperature.

TH. E. Dr. Magendie's experiments have shown that veratria acts upon the animal economy like the most violent irritant poisons, and produces vomiting, and very copious and frequently bloody evacuations, induced by the inflammation of the intestinal mucous membrane, and that these symptoms are often followed by tetanus and death. However, he thinks that this substance, administered in proper doses, may be a valuable substitute for colchicum, white hellebore, &c., which are indebted to this principle for the properties they possess; indeed, he has exhibited it with good effects as a drastic purgative, in cases in which it was necessary to procure promptly copious alvine evacuations. Nevertheless, it is a very dangerous substance, the employment of which requires the greatest caution.

D. & M. OF ADM. *Veratria pills*, F. M. (Veratria, gr.½; gum Arabic and simple syrup, q. s. for 6 pills.) Dose, from No. j. to iij. a day.——*Alcohol of* *veratria*, F. M. (Veratria, gr.iv.; alcohol, ℥j.) Dose, from gutt.x. to xxv. in a cupful of a mucilaginous drink, and externally in frictions, q. s.——*Solution of veratria*, F. M. (Sulphate of veratria, gr.j.; distilled water, ℥ij.) Dose, from ʒ to ʒiv.

Externally. *Veratria salve*, F. M. (Veratria, gr.iv.; hog's lard, ℥j.) In frictions.

Family Ranunculaceæ.

Black Hellebore. *Hellebori nigri radix*. *Melampodi helleborus niger*, Lin. A perennial plant, growing in the mountains of Vosges, Dauphiné, and Provence, and flowering in the month of December.

P. U. The root.

B. C. Stem subterraneous, horizontal, articulate; leaves apparently radical, petiolate, seven or eight-lobed, tough, dentate, and ob-oval; flowers one or two on a scape, from two to six inches high, of a pink colour, very large, nodding, two bractes; calix regular, persistent, five-parted; corolla ten or twelve; petals hollow and cornet-like; fruit, from three to six capsules.

P. P. This root is of the length and size of the little finger, grey, or reddish internally, blackish externally, marked with circular rings, not distant from each other, and furnished with numerous radical fibres; its taste, which at first acrid and bitter, seems to benumb the tongue; its odour nauseous.

C. P. It contains, according to Messrs. Feneulle and Capron, a fatty oil slightly acrid, a resinous matter, an odorous volatile acid, a bitter principle, wax, &c. Water, and especially alcohol, take up its active principles, which are mostly lost a long ebullition.

Th. E. The local action of black hellebore is very irritant. Its volatile principle seems to act in a special manner upon the nervous system. It is one of the most energetic drastic purgatives, and is administered occasionally in dropsies and certain diseases of the skin. Its employment may be followed most serious accidents. It was formerly highly recommended in cases of mental alienation. It is sometimes exhibited emmenagogue and anthelmintic. The employment of this substance requires a good deal of caution.

D. & M. of Adm. Powder, gr.x. to ℈j. Infusion, ʒij. to ℔j. of boiling ℥j. of which is given every four hours.——*Extractum hellebori nigri*, E., D. gr.vj. to xij. in pills.——*Bacher's extract of hellebore*, P. (Black hellebore sub-carbonate of potassa, 1; alcohol and white wine, āā. 16.) Dose, from to x. in pills.——*Bacher's tonic pills*, P. (Bacher's extract of hellebore, extract of myrrh, āā. 8; carduus benedictus, 3; for one-grain pills.) Dose, No. j. to ij.——*Tinctura hellebori nigri*, L., E., D., U. S., P. (Black hellebore alcohol, 8; cochineal, q. s., to give a fine colour.) Dose, from gutt.xx. to ʒss. even ʒj., in a proper menstruum.

The GREEN HELLEBORE, *Helleborus viridis*, Lin., and the STINKING HELLEBORE, *H. fœtidus*, Lin., possess the same properties, and were formerly used to fulfil the same indications, as the black hellebore.

Family Euphorbiaceæ.

CROTON OIL. *Oleum tiglii*. A fatty oil obtained from the seeds of the *Croton tiglium*, Lin., a shrub, growing in the Molucca Islands.' These seeds are known in commerce by the name of *Tilly seeds*, or *Grana tiglia*.

B. C. Trunk moderately high and branchy; leaves oval, acuminate, smooth, dentate, with two glands at the base; flowers straight, simple at the extremity of the branches, of a pale colour; the inferior flowers female, the superior male; fruit a three-celled capsule, each cell containing one seed.

P. P. The grana tiglia are oval, oblong, almost quadrangular, five or six lines long, and furnished with a yellowish epidermis. When this coat is taken off, their surface is black and smooth, and presents several projecting nerves, extending from the umbilicus to the top of the seed; the two lateral ones are the most apparent. They furnish a yellow orange oil, of a sharp, warm taste, and of a very unpleasant smell, *sui generis*.

C. P. According to Dr. Nimmo, this oil contains sweet fixed oil, 55; an acrid purgative principle, called *tigline*, 45; which, according to Dr. Paris, is very nearly related to *elatine*. This substance is of a resinous nature; it reddens slightly the tincture of litmus, and is soluble in water; but it dissolves easily in alcohol, ether, and in the fixed or volatile oils.

PREP. We are not acquainted with the mode by which it is prepared in India; but it seems very probable that it is obtained by expression or ebullition.

TH. E. Administered in small doses, this oil seems to be absorbed very readily, and it acts upon the intestines by means of its influence upon the nervous system. It produces, in this manner, more or less copious alvine evacuations. This effect is produced, whether it be introduced into the stomach, injected into the veins, or applied to an absorbent surface. The general action of this substance seems also to promote the secretion of urine, and to induce diaphoresis. In large doses, it acts in a direct and immediate manner on the intestinal mucous membrane, and produces a violent inflammation, attended with the most serious symptoms. This article is exhibited with advantage in cases of obstinate constipation, when the other drastics have been administered without effect, and when it is necessary to obtain very prompt results, or wh there is any impediment to the administration of a comm purgative, as in cases of tetanus, mania, &c. Dr. Ainslie h exhibited it with great advantage in frictions, in cases o chronic rheumatism, and tumours of the articulations. T very violent action of this medicine requires the greatest attention from the physician.

D. & M. OF ADM. Gutt. j. to iv., at most, in ℥ss. of syrup, or in pil crumb of bread or soap.——*Dr. Smith's cathartic mixture.* (Croton oil, g mucilage of gum Arabic, ℥j.; sugar, q. s.) To be taken in two doses.—— *oil soap*, F. M. (Croton oil, 2; solution of caustic soda, 1.) Dose, from gr. iv., with sugar, or in pills.

Under the name of PURGING OR BARBADOES NUTS, *Pink indici, &c.*, the seeds of the *Jatropha curcas*, Lin., a shrub the same family, have been often mistaken for those of *Croton tiglium;* but they differ essentially from the latt They are of a dull blackish-brown colour, and smooth at th surface. They are externally convex, rounded, with a slig prominent angle in the middle; the angle on the internal s is more marked. The almond is covered with a whitish pellicle; its tunic is composed of two coats; the one spongy a whitish, the other hard, compact, and brownish. These se also are endowed with irritant properties, which render th drastic and emetic.

The same may be said of the *Jatropha gossypifolia*, Li and *J. multifida*, Lin., which are now no longer employ However, M. Caventou has obtained from the purging n by means of alcohol, an oil altogether similar to the croton possessing absolutely, and in a similar degree, the same therapeutic properties.

CATAPUCIA OIL. *Oleum catapuciæ minoris* seu *Euphor lathyris*, a fatty oil, extracted from the seeds of the *Euphor lathyris*, Lin. A biennial plant, indigenous to France. It also cultivated in our gardens.

B. C. Root perpendicular, white; stem straight, simple, from two to thre high; leaves sessile, opposite, of a light green, and lanceolate; flowers monoic forming a large umbel composed of four rays; male flowers with from fifte twenty stamina, around the female flowers; fruit, three-sided, with three c containing each a large yellowish seed.

P. P. The oil extracted from the seeds is white, transparent, inodorous, and almost tasteless.

C. P. It has not yet been investigated with care. It is probable, however, that it contains, like the croton oil, an acr principle, and a certain proportion of sweet fixed oil.

PREP. It is prepared by expression, or by treating the seeds, reduced to a paste, with alcohol or with ether.

TH. E. The country people in France have been for a long time in the habit of using the fresh leaves and roots of this plant, which is full of a milky, acrid, and almost caustic juice, in order to obtain copious alvine evacuations; but its administration being rather dangerous, on account of its energy and uncertainty, it ought not to be used except in cases of absolute necessity, and unless no other purgative medicine can be procured. Drs. Frank and Calderini have of late discovered that the oil obtained from the seeds of this plant possesses a purgative property, and have administered it as a purgative with great success in numerous cases. The observations of Dr. Bally, and of other practitioners, leave no doubt as to its efficacy. And the learned physician we have just mentioned, thinks that it may be advantageously substituted for the croton oil itself, since its action is much less violent, and its taste being scarcely perceptible, its administration is very easy, especially with children. Another advantage of this medicine is, that its price is so moderate that there is no inducement to the sophistication of this drug.

D. & M. OF ADM. Gutt.vj. to x. at most, in an emulsion or in pills.——*Purgative mixture with catapucia oil.* (Catapucia oil, gutt.viij.; gum Arabic, ʒj.; sugar, ℥ij.; distilled water, ℥iij.) Dose, from cochl. j. to ij., every hour until it operates.

Family Rhamneæ.

BUCK THORN. *Fructus rhamni cathartici. Rhamnus catharticus*, Lin. *Spina cervina.* A native shrub, very common in woods and hedges.

P. U. The fruit.

B. C. Stem from eight to ten feet high, ramose; leaves opposite, oval, acute, cordiform, of a light green colour; flowers dioicous, small, greenish; calix tubular, four-divided; corolla with four very small and linear petals; male flowers four stamina, and a rudimentary pistil; female flowers, ovary globular, four monospermous cells, four stigmas; fruit globular, containing three small kernels.

P. P. The buckthorn berries are pisiform, black when they are perfectly ripe, shining, with a bright point in the centre, containing a greenish pulp, of a bitter and unpleasant taste, and nauseous smell.

C. P. The expressed juice of buckthorn contains, according to M. Vogel, a peculiar colouring principle, free acetic acid, mucilage, and a matter containing nitrogen and sugar. *Sap-green*, a colour extensively used by painters, is prepared by combining the juice of buckthorn with lime.

Th. E. The pulp of the buckthorn berries is a very energetic purgative, the operation of which is frequently accompanied with violent colics, dryness of the mouth, thirst, and other symptoms of a lively irritation of the gastro-intestinal mucous membrane. This remedy suits only persons of a robust temperament, difficult to be operated upon. Sydenham recommended it highly in the treatment of dropsy. It is employed occasionally as a vermifuge.

D. & M. of Adm. Entire fresh berries, No. x. to xx.——*Expressed and fermented juice*, P. ʒij. to ʒiv.——Decoction, No. xx. to xxx. to ℔j. of water.——*Extract or rob of buckthorn*, P.——*Rob spinæ servinæ*, A. ℈j. to ʒjss.——*Syrup*, P. (Buckthorn berry juice and sugar, āā. equal parts.)——*Syrupus rhamni*, L. (Buck thorn berry juice, 128; ginger and Cayenne pepper, āā. 1; sugar, 84) Dose, from ʒij. to ℥j. and above, in an aqueous menstruum.——*Purgative mixture*, Paris H. (Buckthorn syrup, ℥ss.; tincture of jalap, ℥j.; decoction of succory, ℥iv.)

The fruit of the European Black Alder, *Rhamnus frangula*, Lin., possesses the same properties.

Family Polygoneæ.

Rhubarb. *Rhabarbarum* seu *Rhei radix*. *Rheum palmatum*. Lin. A perennial plant, native of China and Tartary, and cultivated in different parts of Europe, especially in France, in the department of Morbihan.

P. U. The root.

B. C. Stem simple, straight, cylindrical, from two to four feet high, ramose at top; leaves very large, petiolate, the limb divided in seven acute lobes, irregularly cut on the sides; flowers small, yellowish, very numerous, in an elongate panicle at the top of the stem; calix five or six-divided; nine stamina; five simple stigmas, almost sessile; fruit, a capsule with three prominent angles.

P. P. We find in commerce three principal species of rhubarb, viz.,

The *Russian rhubarb*, the most valued of the three, is in pieces somewhat flattened, irregular, sometimes angular, smooth, with a hole in the middle, of a yellow colour externally, irregularly marked internally, with red and white veins, of a compact fracture, of a strong, peculiar odour, of a bitter and astringent taste, gritty under the teeth, dying the saliva of a saffron-yellow colour; its powder is of a pure yellow.

The *Chinese rhubarb* is in round pieces, larger than those of the preceding, not so smooth, nor so well prepared; generally with small holes, of a dirty yellow colour, and covered over with a yellowish powder. Their texture is compact, of a dull red colour, and marked internally with white veins; of a dull and rough fracture, gritty under the teeth, having a taste and a smell similar to the preceding.

The *Rhubarb* cultivated in France, and of late in England, is less esteemed than the others, and is not furnished by the *Rheum palmatum* alone, but also by the *R. undulatum* and *compactum.* It is cultivated on a large scale at Rheumpole, in the department of Morbihan. This species is in pieces resembling very much the exotic rhubarbs in appearance and shape, but they are easily distinguished from them by their exterior, which is slightly red, and possessing a sweeter smell, being very slightly bitter, mucilaginous, and sweet, and principally for their not being gritty under the teeth.

C. P. The *Russian* and *Chinese* rhubarbs are very similar in their composition; they contain a peculiar principle, to which they are indebted for their smell, taste, and colour, which has been called *Rhabarbarine;* a small quantity of fixed sweet oil, some super-malate of lime, gum, starch, oxalate of lime, in the proportion of one-third of its weight; some lignin, and salts of lime and potassa. The French rhubarb differs from the others, inasmuch as it contains only one-tenth of oxalate of lime, a larger proportion of starch, and a more considerable quantity of colouring principle, of a reddish hue. Alcohol dissolves 2.7 in 10 parts of rhubarb, ether 1.5, and boiling water almost one half. It is necessary to remark that this root loses a part of its purgative properties by ebullition in water, and becomes more bitter and astringent.

RHABARBARINE is yellow, soluble in warm water, alcohol, and ether, insoluble in cold water; of a bitter and harsh taste. It volatilizes on exposure to heat, and gives a yellow vapour. It acquires a red colour with alkalies, and forms with the acids insoluble yellow compounds.

INCOMP. SUBST. The strong acids, lime-water, the sulphates of iron and zinc, nitrate of silver, tartar emetic, corrosive sublimate, the infusions of catechu, of bark, and of cascarilla.

TH. E. Rhubarb is at once purgative and tonic; in small doses it acts only as an astringent, but in large doses it produces at first the phenomena of purgation, and afterwards it acts as a tonic. It is exhibited with great success in cases of debility of the stomach, anorexia, diarrhœa, and generally in all cases when a gentle and rather tonic purgative is indicated. This remedy is very much used in a great many affections, which it would be impossible fully to describe here; it is an excellent medicine for children. The rhubarb indigenous to France is less active than the China or Russia rhubarb, and it is required to give three times as much, in order to produce a similar effect. The same may be said of the English rhubarb.

D. & M. of Adm. Powder, as a tonic, gr.vj. to gr.xij.; as a purgative, ℈j.
ʒss., and even more.——*Pulvis rhei compositus*, New York H. (Rhubarb
calomel, āā. equal parts.) Dose, from gr.x. to gr.xx.——*Powder of rhuba*
ipecacuanha, Paris H. (Rhubarb, gr.xij.; ipecacuanha, ℈j.) In several do
——*Pulvis rhei compositus*, Guy's H. (Rhubarb and sub-carbonate of soda.
columbo, ʒij.) Dose, from gr.x. to gr.xx., two or three times a day.——*Pu*
rhei cum magnesia, Guy's H. (Rhubarb, ʒj.; magnesia, ʒij.) Dose, from
to ʒj.——*Pulvis rhei salinus*, Guy's H. (Rhubarb, ʒj.; sulphate of potassa,
Same doses.——*Pulvis rhei cum hydrargyro*, Guy's H. (Rhubarb, ʒiv.; calo
and ginger, āā. ʒj.) Dose, from gr.x. to ℈j.——*Mistura rhei composita*, Guy's
(Rhubarb, ʒj.; sub-carbonate of soda, ʒij.; tincture of orange peel, ℥jss.; decoc
of liquorice, ℥xss.) Dose, from ℥ss. to ℥j., two or three times a day.——Infus
ʒij. to ʒiv. to ℔ij. of boiling water.——*Infusum rhei*, New York H. (Rhubarb,
boiling water, 0ss.)—E. (Rhubarb, 1; alcohol of cinnamon, 2; boiling water,
Dose, from ℥j. to ℥iv.——*Infusum rhei aquosum*, R., F. (Rhubarb, 32; tart
of potassa, 3; boiling water, 288.) Dose, from ʒj. to ʒiv. and more.——*Inf*
rhei cum alkali, A. (Rhubarb, 3; carbonate of potassa, 1; boiling water,
——*Tinctura rhabarbari aquosa*, Den. (Rhubarb, 4; carbonate of soda, 1;
ing water, 40.)——*Infusum rhei boraxatum*, Pol., Pr. (Rhubarb, 6; sub-bor
of soda, 1; vinous cinnamon water, 8; boiling water, 48.) Same doses.——
Pilulæ rhei cum soda, Guy's H. (Rhubarb and sub-carbonate of soda, āā. ʒ
treacle, q. s., for 60 pills.) Dose, from No. ij. to No. iv.——*Pilulæ rhei aro*
ticæ, Guy's H. (Rhubarb, ʒij.; capsicum, ʒj.; extract of aloes and squill,
gr.xxx.; treacle, q. s., for 60 pills.) Dose, from No. ij. to No. iv., once or tw
a day.——*Pilulæ rhei compositæ*, E., U. S. (Rhubarb, ℥j.; socotorine aloes,
myrrh, ʒiv.; essential oil of peppermint, f.ʒss.) Dose, from gr.x. to ℈j.; twi
day.——*Rhubarb lozenges*, P. (Rhubarb, 1; sugar, 8; mucilage of gum traga
with cinnamon water, q. s., for twelve-grain lozenges, each of which contains
grain of rhubarb.) Dose, from No. iv. to xij. a day, as a stomachic.——*Extrac*
rhei, L., P., Pol., F., Pr. Dose, from ℈j. to ʒj.——*Extractum rhei compo*
Pol., Pr. (Extract of rhubarb, 3; aloes, 1; alcohol, q. s.)—Den. (Extract
rhubarb, 16; aloes, 5; jalap soap, 8; alcohol, q. s.) Dose, from gr.x. to
——*Tinctura rhei*, U. S. (Rhubarb, ℥iij.; cardamom, ℥ss.; diluted alcohol,
—L. (Rhubarb, ℥ij.; cardamom, ℥jss.; saffron, ʒij.; proof spirit, 0ij.—D.
barb, ℥ij.; lesser cardamom, liquorice, āā. ℥ss.; saffron, ʒij.; proof spirit, 0ij.
(Rhubarb, ℥iij.; cardamom, ℥ss.; proof spirit, ℔ijss.)—A., B. (Rhubarb, 1;
cohol, 6.)—Guy's H. (Rhubarb, ℥j.; capsicum and ginger, āā. ʒj.; alcohol,
——*Tinctura rhei composita*, L. (Rhubarb, ℥ij.; liquorice, ℥ss.; ginger and
fron, āā. ʒij.; alcohol, 0j.; water, f.℥xij.)——*Tinctura rhei et aloes*, E.,
(Rhubarb, ʒx.; aloes, ʒvj.; small cardamom, ʒiv.; alcohol, 0ijss.)——*Tinct*
rhei et gentianæ, E., U. S. (Rhubarb. ℥ij.; gentian root, ℥ss.; alcohol, 0ij
a purgative, all these tinctures are given in the dose of from ʒiv. to ʒvj.; and
stomachic, from ʒj. to ʒij.——*Vinum rhei*, E., U. S. (Rhubarb, ℥ij.; alc
f.℥ij.; canella, ʒj.; Spanish wine, 0j.)—F. (Rhubarb, 8; cardamom, 1; Span
wine, 48.)——*Tinctura rhei vinosa*, Pr., Pol. (Rhubarb, 8; orange pee
extract of elecampane, āā. 2; cardamom, 1; sugar, 12; Malaga wine, 96.)—De
(Rhubarb, 8; gentian, 3; cardamom, 2; white wine, 96.) Dose, from ℥ss. to
——*Syrupus rhei*, U. S. (Rhubarb, ℥ij.; boiling water, 0j.; sugar, q. s.——
Syrupus rhei aromaticus, U. S. (Rhubarb, ʒv.; cloves, cinnamon, āā. ℥ss.;
meg, No. ij.; water, 0j.; digest and evaporate till the liquor is reduced to ha
pint; strain, and add one pound of sugar, and half a pint of diluted alcohol.
boil to the consistence of a syrup.)——*Syrupus rhei cum senna*, U. S. (Rhu
senna, āā. ℥jss.; cardamom, ʒiij.; boiling water, 0j.; sugar, ℔j.)——*Syru*
compositus, P. (Rhubarb, 20; coriander and fennel seeds, āā. 1; water, 200;
gar, 400.——*Syrupus rhei*, F. (Infusion of rhubarb, 1; sugar, 2.)—Pol., R., P.
Den. (Rhubarb, 12; cinnamon, 3; carbonate of soda, 1; boiling water, 96;

gar, 144.)——*Compound syrup of succory*, P. (Rhubarb, 6; fumitory and scolopendrium, āā. 3; wild succory root, 9; alkekengi, 2; cinnamon and yellow sanders, āā. 1; water, 192; sugar, 80.) Dose, from ʒj. to ʒij.

RAPONTIC ROOT. *Rheum raponticum*, Lin. A plant very nearly related to the preceding, and which may be employed in similar cases, and in the same manner. However, as it possesses tonic properties to a certain degree, it is necessary to administer it in larger doses, in order that it may prove a purgative.

Family Leguminosæ.

SENNA. *Sennæ folio et folliculi.* This remedy is furnished by several shrubs of the genus *Cassia*, which Linnæus has united under the name of *Cassia senna*, and which have been since distinguished by those of *Cassia acutifolia*, Delile; *C. obovata*, Colladon; and *C. lanceolata*, Nectoux. These plants grow abundantly in Egypt and Nubia, and the second is cultivated in Italy and Spain.

P. U. The leaves and fruit, or follicles.

B. C. Stem from two to three feet high, straight, ramose; leaves alternate, pinnate, composed of from four to eight pairs of leaflets of different forms in the different species which we are now investigating; flowers yellow, in pedunculate and axillary spikes; calix, coloured, five caducous divisions; corolla, irregular, five declined and free petals; fruit, a flattened pod, elliptical, bivalve, with several cordiform seeds, contained in separate cells.

P. P. Most of the senna found in commerce under the name of Alexandria senna (Séné de la Palte), is a mixture of the leaflets of the three different species we have just mentioned. Those furnished by the *Cassia acutifolia* are the most valued; they are oval, acute, lanceolate, entire, from eight to fifteen lines long, presenting on the back a very prominent longitudinal nerve, of a yellowish-green colour on the upper face, pale-green, and slightly glaucous underneath. Those belonging to the C. *obovata* are obovate, larger at the top than at the base, very obtuse, one inch long, otherwise similar to the preceding. Finally, the leaves of the C. *lanceolata* are narrower, longer, smooth, and their petioles are glandular. These different species possess rather a pleasant smell; their taste is bitter and viscous. As to the pods or follicles, three different sorts are introduced in commerce, viz. the Alexandria follicles, which are large, of a deep and blackish-green colour, smooth, and flattened; the Tripoli follicles, which are smaller, of a light green, approaching to fallow; and the Aleppo follicles, which are nearly black, narrow, twisted, and almost semicircular. Their smell and taste are similar to those of the leaflets.

C. P. Senna, according to Messrs. Lassaigne and Feneulle, contains a peculiar substance, called *Cathartine*, some chlorophyllin, a fatty oil, a small quantity of volatile oil, a yellow colouring principle, albumen, and salts of lime and potassa. Water and alcohol dissolve its active properties.

CATHARTINE seems to be the active principle of senna; it is neither acid nor alkaline, and does not crystallize; it is slightly deliquescent, of a reddish-yellow colour, of a peculiar odour, and of a bitter and nauseous taste. It dissolves in water and alcohol, but not in ether. Heated, it is decomposed rapidly. It has not been introduced into practice.

INCOMP. SUBST. The strong acids, the alkaline carbonates, lime-water, tartar emetic, infusion of yellow bark.

TH. E. The leaves and follicles of senna act with great energy on the gastro-intestinal mucous membrane, and prove a very powerful purgative, often producing nausea and colic pains, when administered in considerable doses, and uncombined with some aromatic substance. To remedy the inconvenience attending this very drastic property, English practitioners generally combine ginger, or some other substance of a hot aromatic nature with it. When thus combined, senna becomes a very safe and valuable purgative, even as a domestic medicine. It is commonly used in the form of infusion, to which is frequently added other medicinal substances, such as salts of different kinds, rhubarb, jalap, manna, &c.

D. & M. OF ADM. Powder, almost obsolete, ℈j. to ʒj. Infusion, ʒij. to to ℥viij. of boiling water.——*Infusum sennæ*, F. (Senna, 1; boiling water, —D. (Senna leaves, ʒiij.; lesser cardamom, ʒss.; boiling water, f.℥vj. (Senna, ʒvj.; ginger root, ℈j.; boiling water, ℥ix.)——*Infusum sennæ comp* U. S. (Senna, ℥jss.; super-tartrate of potassa, ʒij.; ginger, ʒj.; boiling Oj.—L. (Senna, ℥jss.; ginger, ʒj.; boiling water, Oj.)——*Infusum sennæ et ta-marindi*, D., U. S.——*Infusum sennæ compositum*, E. (Senna, ʒj; tamarind, coriander, ʒss; sugar, ℥ss.; boiling water, Oss.)—DEN., PR. (Senna, 12; rants, 6; coriander, 2; tartrate of potassa, 5; manna, 40; boiling water, ——*Purgative draught*, PARIS H. (Senna, 2; boiling water, 16; tartrate of tassa and soda, 1; manna, 3.) Dose, from ℥ij. to ℥iv.——*Common purg draught*, P. (Senna and sulphate of soda, āā. 4; rhubarb, 1; manna, 24; 80.) Dose, from ℥ij. to ℥iv.——*Mistura sennæ composita*, GUY'S H. (Senna common mint, āā. ℥j.; boiling water, ℔ij.; sulphate of magnesia, ℥vj.) Dose, ʒij. to ʒiv.——*Purgative anti-arthritic powder*, P. (Senna, super-tartrate tassa, gum Arabic, and cinnamon, āā. 2; scammony, sarsaparilla, china root, guaiac, āā. 1.) Dose, from gr.xij. to ℈j., and more.——*Pulvis sennæ comp* L. (Senna and super-tartrate of potassa, āā. ℥ij.; scammony, ℥ss.; ginger, F. (Senna, 2; scammony, 1; tartrate of potassa, 4.)——*Pulvis pectoralis quoritiæ compositus*, PR., POL. (Senna and liquorice, āā. 2; fennel seed flowers of sulphur, āā. 1; sugar, 6.) Dose, from ℈j. to ʒj.——*Confectio Lenitive electuary*, U. S. (Senna, ℥viij.; coriander, ℥iij.; liquorice, ℥iv.; prunes (pulp), ℔j.; tamarind, ℔ss.; sugar, ℔ijss.; water, Oiv.; boiled down one-half.)—L. (Senna leaves, ℥viij.; figs, ℔j.: tamarind pulp, cassia pulp, prunes, āā. ℔ss.; coriander seeds, ℥iv.; liquorice root, ℥iij.; sugar, ℔ijss.; q. s.)—— *Electuarium sennæ compositum*, E. (Senna, ℥viij.; coriander seeds, liquorice, ℥iij.; figs, pulp of prunes, āā. ℔j.; pulp of tamarind, ℔ss.; sugar, ℔ijss.; water, ℔iv.)—D. (Senna, ℥iv.; pulp of prunes, ℔j.; pulp of tamarinds, ℥ij.; molasses, Ojss.; essential oil of caraway, ʒij.) Dose, from ʒj. to ʒiv.——*Electuarium lenitivum*, P. (Senna, 56; tamarinds, 88; extract of cassia fistula, 72; prunes, jujubes, and scolopendrium, āā. 12; barley, currants, and polypodium, āā. 16; mercurialis, 32; fennel and aniseed, āā. 1; sugar, 320; water, q. s.)——*Electuarium sennæ*, F. (Senna, 8; pulp of tamarinds, 24: coriander, 1; simple syrup, 16.)—Pol., Pr. (Senna, 9; aniseed, 1; pulp of tamarinds and prunes, āā. 10; dry figs, 16; sugar, 32; water, q. s.) Dose, from ℥ss. to ℥j.——*Electuarium sennæ compositum*, Guy's H. (Senna and tartrate of potassa, āā. ʒiv.; jalap, ʒij.; ginger syrup, ℥jss.) Dose, from ʒj. to ʒij.——*Confectio sennæ composita*, Guy's H. (Confectio senna, ℥ij.; flowers of sulphur and sulphate of potassa, āā. ʒiv.; simple syrup, q s.) Dose, from ʒj. to ʒij.——*Aqueous and alcoholic extract*, P. Dose, from gr.xij. to ℈j.; seldom used.——*Tinctura sennæ*, L. (Senna, ℥iij.; caraway seed, ʒiij.; cardamom, ʒj.; dry raisins, ℥iv.; alcohol, Oij.)—D. (Senna leaves, ℔j.; caraway seeds, ℥jss.; cardamom, ℥ss.; proof spirit, Cj.)——*Tinctura sennæ composita*, formerly *Elixir salutis*, U. S. (Senna, ℥iij.; jalap, ℥j.; coriander and caraway seeds, āā. ℥ss.; cardamom, ʒij.; diluted alcohol, Oiijss.)—E. (Senna, ℥ij.; jalap root, ℥j.; coriander seeds, ℥ss.; proof spirit, ℔iijss.) Dose, from f.ʒij. to f.℥j——*Tinctura sennæ aromatica*, *Warner's gout cordial.* (Senna, ʒij.; coriander and fennel seeds, āā. ʒj.; red sanders, ʒij.; saffron, liquorice, āā. ʒss.; stoned raisins, ℔ss.; diluted alcohol, Oiij.)——*Syrupus sennæ*, L. (Senna, ℥ij.; fennel seeds, ℥j.; manna, ℥iij.; sugar, ℔j.; boiling water, Oj.)—E. (Senna, ʒij.; boiling water, ℔jss.; burnt syrup, ℥viij.)—D. (Manna and sugar, āā. ℔j.; senna leaves, ℥ss; boiling water, Oj.)—B. (Senna, 2; sugar, 9; boiling water, 12.)—P. (Senna, 125; fennel seed, 16; cloves, 2; juice of rennet apple, 1000; juice of borage and ox-tongue, 750; water and sugar, āā. 1000.) Dose, from ℥ss. to ℥j., and above.——*Enema of senna*, Paris H. (Senna, ʒiv.; decoction of flaxseed, ℔j.)——*Laxative enema*, Paris H. (Senna, ℥ss.; emollient ingredients, ℥ij.; sulphate of soda, ʒij.; water, q. s.)

American Senna. *Cassia marylandica*, Lin., *C. riparia*, Rafinesque. A perennial plant, growing in almost every part of the United States, in low places, and principally along streams.

P. U. The leaves.

B. C. Stems many, nearly smooth, upright, from three to six feet high, cylindrical and simple; leaves alternate, petioles compressed, chancelled above, with an ovate and stipitate gland at the base, bearing from eight to ten pairs of folioles, with short uni-glandular petioles; flowers of a bright yellow colour, paniculate, although partly axillary, and in short racemes, having each from five to fifteen flowers; calix coloured, with six oval, obtuse, and unequal segments; petals five spatulate, the two lower ones larger; stamina with yellow filaments; germ deflexed with the lower stamina, and hairy; fruit pendulous, linear, and flat pods, somewhat hairy and blackish, from two to three inches long, and containing from twelve to twenty seeds.

P. P. Taste mucilaginous and nauseous.

C. P. The predominant principles of the American senna are resin, mucilage, a colouring matter, a volatile substance, and probably some cathartine.

Th. E. This substance seems to be a very valuable cathartic, although inferior in strength to the Alexandria senna. It requires about one-third more to produce an ordinary cathartic effect. Several physicians have exhibited it with the same success as common senna. It is much used by country practitioners as a substitute for the officinal article.

The leaves of the *Cynanchum arguel*, Delile, a shrub of the family *Apocyneæ*, which grows in the same regions as the true senna, are very often mixed with those of the latter. They may be distinguished by their being thicker than the senna leaves, having scarcely any nerves, with a shagreen-like and pale surface, and of a more bitter taste. This fraudulent mixture is made in the country itself where the senna is obtained

The leaves of the *Buxus sempervirens*, Lin., and *Colutea arborescens*, Lin., &c., are likewise used for adulterating senna, but this fraud offers but slight inconveniences, inasmuch as these plans possess also a purgative property, but rather less certain than that of senna.

HEDGE HYSSOP. *Gratiola officinalis*, Lin. A plant of the family *Scrophulariæ*, growing in low grounds, acts in a very energetic manner on the intestinal canal. It is used only by the country people as a drastic purgative. It is not used in common practice; it has been, however, recommended as an anthelmintic.

The *Globularia alypum*, and the *G. vulgare*, are plants growing in the south of France, and belonging to the family *Globulariæ*. They possess considerable purgative properties. Dr. Loiseleur Deslongchamps has exhibited them successfully as a gentle purgative, and considers them, the former especially, as the best substitute for senna. The leaves are used in decoction, in the dose of from ʒij. to ʒvj. They are almost obsolete.

WHITE AGARIC, *Boletus laricis*, Lin., a plant of the family *Fungi*, growing on the *Pinus larix*, is white, porous, of a sweetish, and afterwards bitter taste, and inodorous. It contains a peculiar resinoid matter in very considerable quantity, and a fungous substance. It is one of the most powerful drastic purgatives, formerly employed as a hydragogue in passive dropsies. It is now almost discarded, on account of the uncertainty of its operation. It may be given in powder, in doses of from gr.iv. to gr.xij. in pills, or in the form of *extract*, P., in the dose of from gr.½ to gr.iv.

The root of several species of the genus *Iris*, such as *Iris pseudo-acorus*, Lin., *I. germanica*, Lin., and *I. florentina*, cortain, when they are fresh, an acrid and irritating juice, which acts as a drastic and an emetic. They were once in considerable use, but they are now discarded. The orris root alone is yet employed in the composition of several officinal preparations, and is used for issue peas. Perfumers employ it to scent articles of perfumery with the odour of violets, which it possesses to a considerable degree.

The AMERICAN BLUE FLAG, *Iris versicolor*, Lin., an American plant, very common on the banks of ditches, &c.; is also an active cathartic in doses of a few grains, when dry. Dr. Bigelow asserts, however, that it is apt to occasion a distressing nausea resembling sea-sickness, with a prostration of strength of some hours continuance. Its activity is diminished by age. This root possesses likewise some diuretic properties, and when administered in moderate doses, in the form of decoction or tincture, it has proved efficacious in anasarca and other dropsical affections.

The *Eupatorium cannabinum*, Lin., of the family *Synanthereæ corymbiferæ*, is also endowed with some purgative properties, but is now abandoned.

CHAPTER XI.

LAXATIVE REMEDIES.

The term *Laxative*, (*laxare*, to relax), has long been applied indiscriminately to all gentle purgative remedies; but according to Dr. Barbier's classsification, we shall apply it only to substances capable of promoting alvine evacuations by the relaxing action which they exercise on the internal surface of the intestines; whilst purgatives, properly so called, produce this effect by their irritating action only.

The administration of a laxative remedy is not followed by that sensation of internal heat which commonly attends the exhibition of a purgative one. When ingested, it is not changed to chyle by the action of the stomach, but it operates as an emollient, producing uneasiness, heaviness, and a sensation of anxiety about the epigastric region, which is caused by the resistance it opposes to the digestive powers of this organ. Its passage in the intestinal tube is attended with the same phenomena; and it seems every where to act as a foreign body, offending the organs by its presence. Therefore we soon experience an acceleration of the peristaltic motion, and the discharge of the remedy, with the other contents of the intestines, soon follows. A long continued administration of laxatives, instead of producing inflammation of the gastro-intestinal mucous membrane, as that of purgatives would, occasions debility of the stomach, anorexia, difficulty of digestion, and even diarrhœa; symptoms which may be checked by the exhibition of aromatic or tonic substances.

The general effects resulting from the immediate action of laxative medicines, distinguish them also from purgatives: for instead of stimulating all the organs, they act in the same way as temperants and demulcents, of which we shall speak in chapters XII. and XIII. According to the mode of administration of these substances, they may exercise a local action only, or they may produce no sensible change in the state of the organs with which they come in contact, but act on the general economy. Indeed, when a laxative remedy is admintered in substance, or given in a very small quantity of menstruum, it occasions evacuation, without producing immediately any general phenomena, whilst, if dissolved in a very large proportion of water its local action will be very slight, and its influence will be more especially felt by the general economy. Thus we may say with Dr. Barbier, that demulcents are nothing more than laxatives which have lost their power in the digestive canal.

Most laxative remedies are furnished by the vegetable kingdom; we, however, employ as such some animal and mineral substances. The vegetable laxatives are composed of a saccharine matter, of mucilage, and of a fatty oil. They are inodorous, of a sweet, insipid, or acidulous taste, and yield to water their remedial principles.

From what we have just said of the action of these remedies, it is evident that their employment is preferable to that of purgatives, whenever it is requisite merely to promote alvine evacuations in the inflammatory stage of an affection, where the intensity of the disease might be increased by any excitation; but, for the same reason, they are not calculated to produce all the secondary effects which we have mentioned, when speaking of purgatives, and which are a consequence of the irritation produced by the latter remedies on the gastro-intestinal mucous surface. Laxatives are generally administered in a small quantity of water, and it is sometimes proper to combine them with a slightly stimulating substance in order to facilitate their action.

LAXATIVE MINERAL SUBSTANCES.

MAGNESIA. *Magnesia usta.* Oxide of magnesium. Calcined magnesia. This substance is found in nature in combination with acids, or with certain metallic oxides.

P. P. It is white, pulverulent, smooth to the touch, without either taste or odour, and of the specific gravity of 2.3.

C. P. It is composed of 100 of magnesium, and 68.156 of oxygen. It is insoluble in water, turns the syrup of violets green, and combines with the carbonic acid of the air, at a common temperature.

PREP. It is obtained by calcining in a crucible, the subcarbonate of magnesia.

TH. E. In large doses, magnesia is a gentle purgative, and its employment is always followed with beneficial effects in cases of acidity of the primæ viæ, observable principally in people who use milk habitually, or after violent paroxysms of gout. In small doses, it acts no longer as a laxative, but it is frequently employed in this manner as an antacid, to neutralize the acids formed in the stomach under certain circumstances, and especially in pregnant women and in children. This remedy is also very beneficial in cases of poisoning by acids, on account of the great facility with which they combine with it, and of the harmlessness of the salts resulting from this combination.

D. & M. OF ADM. As a purgatve, ʒij. to ℥ss.; as an antacid, gr.vj. to ℈j.; in cases of poisoning, ʒj. to ʒiv.——*Absorbent powder*, P. (Magnesia and sugar āā. e. p.) Dose, from gr.xij. to ℈ij.—PARIS H. (Magnesia, gr.viij.; cinnamon, gr.j.) For a dose, twice a day.——*Magnesia lozenges*, P. (Magnesia, 1; sugar, mucilage of gum tragacanth made with orange-flower water, q. s.) For twelve gr. lozenges.) Dose, from vj. to xij.——*Magnesia and catechu lozenges*, P. (Magnesia, 32; catechu, 6; cinnamon, 3; sugar, 64; gum tragacanth and cinnamon water, q. s.) For twelve gr. lozenges.

SUB-CARBONATE OF MAGNESIA. *Sub-carbonas magnesiæ.* It is found in nature in very small quantity only, and often impure.

P. P. This salt is found in the shops in the shape of cubic lumps, of a fine white colour, soft to the touch, inodorous, and insipid.

C. P. It is composed, according to Mr. Dalton, of carbonic acid, 40; magnesia, 43; and water, 17. It is unalterable in the air, soluble in an access of carbonic acid, in more than 2000 of cold water, and 9000 of this vehicle when boiling. It turns the syrup of violets green, and produces a strong effervescence with the acids, by which it is decomposed, as well as by heat.

PREP. It is obtained by treating a solution of sulphate of magnesia, by a boiling solution of carbonate of potassa.

TH. E. Its employment is the same as that of calcined magnesia, and it is frequently exhibited under similar circumstances. However, the latter substance is, in many instances, preferred to it, because it is not subject to produce, like the carbonate, a disengagement of carbonic acid, which fatigues the stomach. This gaseous production may, notwithstanding, be very serviceable in some cases in which effervescent draughts are indicated. Finally, it is successfully exhibited in cases of gravel produced by superabundance of uric acid.

D. & M. OF ADM. Powder, ʒss. to ʒij.; suspended in a mixture.——*Pulvis lactopæus*, R. (Sub-carbonate of magnesia, 4; orange peel and fennel seed, sugar, 2.) Dose, from gr.xij. to ʒss. and above.——*Pulvis infantum*, R. (Sub-carbonate of magnesia, 8; cinnamon, 1; sugar, 4.)——*Pulvis magnesiæ compositus*, DEN. (Sub-carbonate of magnesia, oleo-saccharate of fennel, and rhubarb, in equal parts.) Dose, from gr.v. to xv., two or three times a day.——*Gaseous* *nesia water*, Paris H. (Sub-carbonate of magnesia, ʒiij.; diluted sulphuric acid, ʒx.; water, ℔iijss.) Dose, from ℥viij. to ℔j. a day.

Super-tartrate of Potassa. Cream of Tartar. *Potassæ supertartras. Cremor tartari.* This salt exists in grapes and in tamarinds. The dregs of wine contain a considerable quantity of it.

P. P. Its crystals are short tetraedral prisms, semitransparent, white, unalterable in the air, inodorous, of a tolerably acid taste, and of the specific gravity of 1.953.

C. P. Cream of tartar contains a very considerable proportion of super-tartrate of potassa, about seven or eight hundredths of tartrate of lime, and a small quantity of silica, albumen, iron, &c. Insoluble in alcohol, it dissolves in fifteen of boiling, and sixty of cold water; but it may be rendered much more soluble by mixing with it a certain quantity of boracic acid, or borate of soda, which renders the cream of tartar soluble in its own weight of cold water, and in the half only of this menstruum when boiling. This preparation is known by the name of *soluble cream of tartar*. Its aqueous solution is soon decomposed by the contact of the air.

Incomp. Subst. The salts of lime, of lead, and the strong acids.

Prep. It is obtained by dissolving in boiling water the *common tartar*, (a white or reddish crystalline matter which forms on the internal sides of the vessels in which wine has been kept), mixing with it some clay, which precipitates the colouring matter, and then permitting the liquor to crystallize.

Th. E. The action of this substance varies according to the dose in which it is administered. In small doses, it is absorbed, and acts as a temperant, and in this quality it is employed in jaundice, foulness of the primæ viæ, &c. In larger doses, it principally spends its action on the intestinal mucous membrane, and induces alvine evacuations, especially when given in powder. Its taste, being rather less unpleasant than that of the other neutral salts we have already mentioned, and its operation being of a very gentle nature, its administration is frequent. In France, the soluble cream of tartar is generally preferred.

D. & M. of Adm. As a temperant, ʒij. to ʒiv. to ℔j. of water, taken occasionally. As a purgative, ʒj. to ʒij. in an electuary, or even ℥j., dissolved in ℥vj. to ℥viij. of water.——*Cream of tartar lemonade*, Paris H. (Cream of tartar, ℥j.; boiling water, ℔ij.) Dose, a cupful.——*Electuarium sulphuris compositum*, Guy's H. (Cream of tartar, ℥ss.; flowers of sulphur, ℥j.; treacle, ℥iij.) Dose, cochl. min. j., once or twice a day.

VEGETABLE LAXATIVE SUBSTANCES.

Family Euphorbiaceæ.

Castor Oil. *Oleum ricini. Oleum ex semine ricini. Oleum palmæ christi.* A fatty oil obtained from the seeds of the ***Ricinus communis***, Lin., a plant, native of the East Indies and of Africa, where it is said to be perennial, woody, and to attain a considerable height. It is cultivated in this country, but here it is only an annual plant.

B. C. Stem straight, ramose, fistulous, glaucous and reddish; leaves alternate, peltate, palmate, with seven or nine lobes; flowers monoicous, united in extra-axillary and pyramidal clusters; male flowers, calix with five caducous divisions; ovary free, globular, three-sided and three-celled; one very short style; three stigmas; fruit, a capsule with three prominent sides, covered with prickles, and containing each one seed.

P. P. The seeds of the ricinus are oval, flattened on one side, convex and round on the other, of a variable size, generally of the size of a French bean; smooth, shining, of a grey colour, with brown spots on their surface, with a fleshy, white appendix on the umbilicus; white inside; of a sweet taste at first, and afterwards acrid. The oil obtained from it is of a yellowish-white, thick, viscous, and inodorous. It congeals only at several degrees below the freezing point, and its specific gravity is greater than that of the other fixed oils.

C. P. From the recent experiments of Messrs. Lecanu and Bussy, castor oil submitted to distillation furnishes a solid, spongy, yellowish residue, amounting to nearly two-thirds the quantity of the oil employed in the experiment, a very odorous volatile oil, which crystallizes on cooling, and two new acids which they call *ricinic* and *oleo-ricinic acids*, almost concrete, very acrid, to which they ascribe the active properties of the oil under consideration. Besides, it differs from the other fixed oils in this particular, that it is completely soluble in pure alcohol and ether. It becomes easily rancid, and then acquires a very acrid taste.

Prep. It is obtained generally by expression, in the same manner as almond oil, or by the intervention of boiling water. This latter process is still generally adopted in the West Indies, as producing the sweetest oil; but it it is more apt to become rancid.

Th. E. The recent castor oil is a very mild laxative, very generally used in cases in which the effects of an irritant substance on the gastro-intestinal mucous membrane are to be apprehended, as in colics, dysentery, and strangulated hernia.

It acts without occasioning the least irritation, and it may even be exhibited in cases of inflammation of the intestinal canal. But it is quite the reverse when it is rancid; it then acquires an acrimony which renders it violently irritating, and it produces effects nearly resembling those of the most energetic drastics. It ought never to be administered in this altered state. The fresh oil is employed with success as an anthelmintic; it seems to produce upon intestinal worms a special action which destroys them.

D. & M. OF ADM. From ℥ss. to ℥ij., in a cup of light broth, tea, coffee, &c.——*Castor oil purgative emulsion*, P. (Castor oil, 2; yolk of eggs and orange flower water, āā. 1; water, 4.) To be administered in two doses.——*Minorative mixture*, PARIS H. (Castor oil, ℥j. to ℥ij.; tartaric syrup, ℥j.; succory water, ℥ij.)——*Purgative remedies*, PARIS H. (Castor oil, ʒvj.; oxymel of squill, ʒiv.; syrup of buckthorn, ℥j.) To take in two doses.——*Enema olei ricini*, GUY'S H. (Castor oil and honey, āā. ℥j.; decoction of oatmeal, ℥x.)

Family Leguminosæ.

PURGING CASSIA. *Cassiæ fistulæ pulpa. Cassia fistula*, Lin. *Cathartocarpus fistula*, Persoon. A tree, native of Egypt and of India.

P. U. The pulp of the fruit.

B. C. Trunk from forty to fifty feet high, of the size of a walnut tree; leaves large, composed of from five to six pairs of oval and acute folioles, from three to five inches long; flowers large, yellow, in clusters, hanging from the axilla of the leaves; calix, five deep caducous divisions; corolla, five unequal petals; ten stamina; fruit, a pod divided in a great number of pulpy and monospermous cells.

P. P. The fruit of the cassia fistula, known in commerce by the name of *cassia pods*, is a cylindrical legumen, from one to two feet long, of the size of the thumb, marked with a longitudinal band on each suture, divided internally by horizontal partitions into numerous cells, each containing an ovoid, flattened, shining, and very hard seed, located in the pulpous matter. The pulp is the only part employed in medicine; it is of a very dark brown colour, of a very faint smell, of a sweet, mucilaginous and sub-acid taste.

C. P. According to M. Vauquelin, it is composed of an extractive principle, sugar, gelatine, gluten, gum, and of a fibrous matter. It is almost entirely soluble in water. Alcohol and sulphuric ether also dissolve several of its principles.

INCOMP. SUBST. The aqueous solution of cassia fistula, which is of a reddish brown colour, is rendered turbid by the addition of alcohol. Hydro-chloric acid produces a very abundant yellow precipitate.

PREP. Split the pod lengthwise, and scrape off the interior of the cells; in this manner the pulp and seeds are obtained mixed together. By expressing this pulp through a hair sie the purified pulp is obtained.

Th. E. This substance is laxative and temperant. Its employment is indicated when, in the course of a phlegmasi is necessary to keep the bowels open. It acts very gent but it occasionally gripes and produces flatulency. It is laxative well adapted for children and delicate females: b its administration is contra-indicated in cases of hypochon and in atonic affections. It enters into the composition of t lenitive electuary.

D. & M. of Adm. Purified pulp, ℥j. to ℥ij. Decoction, ℥ij. to ℥iv. to water.——*Compound pulp of cassia fistula*, or *Tronchin's marmalade*, Pa (Pulp of cassia fistula, manna, oil of sweet almonds, āā. ℥ij.; orange-flower ʒij.) Dose, from ʒij. to ʒiv., three or four times a day.——*Confectio* ——*Electuarium cassiæ*, E., U. S. (Pulp of cassia, 4 parts; tamarind manna, āā. 1 part; syrup of orauge peel, or of damask rose, 4 parts (Fresh pulp of cassia and syrup of roses, or oranges, āā. ℔ss.; manna, of tamarind, ℥j. Dose, from ℥ss. to ℥j.——*Extract*, P. (Same doses.)— *serva cassiæ*, P. (Extract of cassia, 16; syrup of violet, 12; sugar, 3; oil of orange tree flowers, q. s.) Dose, from ʒij. to ℥j.

Tamarind. *Pulpa tamarindi. Tamarindus indica*, Lin. tree, native of the East Indies and Egypt.

P. U. The pulp of the fruit.

B. C. Trunk elevated, ramose at top, and furnished with a brown bark; pinnate, from ten to fifteen pairs, without an odd foliole; flowers of a yellow, in hanging clusters at the extremity of the branches; calix turbin four caducous lobes; corolla, three petals; three monadelphous stamina ferior part; ovary straight, falciform; fruit, a thick arcuate pod, stran the articulations, and containing a pulp, in the substance of which are locat flattened and irregularly quadrilateral seeds.

P. P. The tamarind of the shops is in the form of a vis pulp, of a reddish-brown colour, inodorous, of a very siderable acid taste, and containing the seeds and remain vegetable fibres.

C. P. This pulp, according to M. Vauquelin's analysis, tains citric acid, 9.40; super-tartrate of potassa, 3.25; taric acid, 1.55; malic acid, 0.45; sugar, 12.50; gum, vegetable gelatine, 6; water and lignous fibres, 61.95. is also occasionally found in it, which seems to be owing vessels in which it has been prepared. Water takes up active principles.

Incomp. Subst. The salts with base of potassa, the alk carbonates, lime water, and tartar emetic.

Prep. The ripe fruit is divested of its lignous envelope the pulpy part is evaporated slowly in brass pans, on derate fire.

Th. E. By the acidity predominating in the pulp of tamarinds, this substance is nearly connected with the temperant and cooling remedies. The simple infusion of this pulp in water constitutes a very pleasant and useful beverage in febrile diseases; but if boiled, and the quantity increased, it acts then on the intestinal canal, which it moves gently, and provokes alvine evacuations. It is, of course, both cooling and slightly purgative. It is exhibited with advantage, in the latter form, in cases where it is desirable to obtain a laxative effect without irritating the intestinal mucous membrane. It is seldom employed alone, but is generally combined with other purgatives.

D. & M. of Adm. Purified pulp, ʒj. to ʒiv. As a temperant, infusion, ℥j. to ℥ij. to ℔ij. of water. As a laxative, decoction, ℥ij. to ℥iij. to ℔ij. of water.——*Electuarium aperiens*, Den. (Pulp of tamarind, 4; senna, 2; super-tartrate of potassa, 1; syrup of manna, 8.) Dose, from ℥ss. to ℥j.——*Veal broth with tamarind*, Paris H. (Pulp of tamarind, ℥ij.; veal broth, ℔ij.)——*Serum lactis tamarindinatum*, B. (Pulp of tamarind, 1; whey, 16.) Dose, by tumblerfuls.

Family Jasmineæ.

Manna. *Manna.* A concrete juice, furnished by the Flowering Ash, *Fraxinus ornus*, Lin., and the Round Leaved Ash, *Fraxinus rotundifolia*, Lam., trees growing in Italy, and especially in Calabria and in Sicily, where they thrive best.

B. C. Trunk about twenty-five feet high; leaves imparipinnate, composed of seven or nine folioles; flowers white, in ramose panicles at the extremity of the branches; calix very small, four-divided; corolla, four linear divisions; fruit, a narrow and elongated capsule, terminated by a plain and obtuse wedge.

P. P. Three different kinds of manna are found in commerce, viz., the manna in tear, or flake manna, *Manna lacrymata*, which is in round, solid, and light pieces, of a white colour, saccharine, and having scarcely any nauseous, taste; the manna in sorts, *Manna communis*, is in masses formed of yellowish flakes, united together by a brownish juice, of a less saccharine taste than the former, but insipid and nauseous; the fat manna, *Manna inferior*, is in soft, viscous masses, of a brown colour, of a disagreeable taste, and mixed with a great many impurities.

C. P. According to Thénard, this substance is composed of a peculiar principle, which he has called *Mannite*, and which is found to exist in manna in variable proportions; of crystallizable sugar, of an uncrystallizable mucous matter, having a nauseous taste, and to which manna appears to be indebted for its purgative properties.

Mannite is white, crystallized in silky flakes, composed of small, semitransparent needles; of a saccharine taste, soluble in water and alcohol, particularly when warm, and incapable of producing the vinous fermentaton, and, consequently, of furnishing alcohol.

Prep. Manna is obtained by incisions made in the bark of the ash tree; the juice exudes, and dries in the air.

Th. E. Manna is a very mild purgative; it appears even that, when recently collected, it has no action on the intestinal canal, since in the country where it is gathered, it is employed for the same purposes as sugar. By the alterations produced by age, it acquires its laxative property. Indeed, the older it is the more powerful are its effects. *Mannite*, according to M. Vassal, induces no purgative effect; consequently the flake manna, which contains this principle in a greater proportion, is not so active as the manna in sorts, which is generally preferred to the former. This substance is principally exhibited in inflammatory diseases, when there is occasion to apprehend any irritation which might be produced by a more energetic purgative. It has also the advantage of being well adapted to children, and persons of weak constitutions. It is very much used, and frequently in conjunction with other purgative substances.

D. & M. of Adm. ℥j. to ℥iij. in water, or rather in milk.——*Aqua laxativa viennensis*, A. (Manna, 8; senna, 6; super-tartrate of potassa, 1; water, [illegible]) Dose, from ℥ij. to ℥iv.——*Compound mixture of manna*, Paris H. (Manna ℥[illegible]; rhubarb, ʒiv.; water, ℥iv.) To be taken in two doses.——*Demulcent mixture of manna*, Paris H. (Flake manna, ℥ij.; sweet almonds and orange flower water, āā. ʒiv.; syrup of peach flowers, ℥j.; infusion of liquorice, ℥iv.) For three draughts.——*Electuarium mannæ*, F. (Manna, sugar, and fennel water, āā. [illegible]; orris root, 1; oil of sweet almonds, 8.) Dose, cochl. min.j. three or four times a day.——*Syrupus mannæ*, Den., R., Pr., Pol. (Manna, 48; senna, 32; fennel seed and ginger root, āā. 1.; sugar, 176; water, 192.) Dose, from ℥ss. to ℥j.

Honey. *Mel.* A saccharine substance, produced by the bee, *Apis mellifica*, Lin.; an hemenopterous insect, which prepares it by means of the saccharine juices it collects in the nectaries of flowers.

P. P. The purest honey is liquid, white, and transparent, such is that of Mahon, of Mount Hymettus, &c.; that of Narbonne and of Gatinais, which comes next in quality, is granulated, thicker, and white; finally, the common honey, which is less esteemed, is of a brown-red colour, and contains a granulated matter, and frequently eggs, and larvæ of bees. The taste of the two first kinds is sweet and agreeable, and their smell slightly aromatic. On the contrary, the brown honey possesses an acrid taste and a disagreeable smell.

C. P. The best honey is formed of liquid and uncrystallizable sugar, of crystallizable sugar analogous to that of grapes, and of an aromatic principle. The common kinds contain besides, wax, acid, and even remains of larvæ. Honey is soluble in water; in this state it undergoes vinous fermentation, producing an alcoholic liquor, called hydromel.

TH. E. In substance, or dissolved in a small quantity of water, honey acts as a gentle laxative, but, generally, it loses this property when diluted with water; it becomes then cooling and emollient. It is frequently employed to edulcorate tisans, but as a laxative it is seldom used; it is the excipient of a great number of preparations, and the base of *oxymels* and *mellita*, or *medicated honeys*.

D. & M. OF ADM. As a laxative, ℥j. to ℥ij. in water or milk.——*Syrup*, P. ℥j. to ℥ij. to edulcorate drinks.——*Hydromel*, P. (White honey, 1; tepid water, 16.) By cupfuls.——*Vinous hydromel*, P. (White honey, 160; tepid water, 830; yeast, 4.)

Externally. *Vinous lotion*, PARIS H. (Honey, ℥ij.; red wine, ℔j.)——*Ceromel*, B. (Honey, 6; wax, 1.)

MERCURIALIS ANNUA, Lin. An annual plant, native of Europe, belonging to the family *Euphorbiaceæ*, and growing plentifully in cultivated places; it has a virose smell, and a bitter and salt taste. It possesses demulcent and laxative properties. The decoction of this plant is employed in enemata, and the boiled leaves are used in poultices. It enters into the composition of some officinal preparations, the most important of which is the *Mercurial honey*, P. (Juice of mercurialis and honey, āā. equal parts), which is frequently used in France as an injection and as a laxative, in the dose of ℥ij. to ℥iv.

PALE ROSE, or HUNDRED LEAVED ROSE. *Rosæ pallidioris petala*. *Rosa centifolia*. A shrub, belonging to the family *Rosaceæ*, cultivated in gardens, and highly valued for the beauty and odour of its flowers.

P. U. The petals.

They are pale, and possessed of a sweetish, sub-acid, and slightly bitter taste, and are endowed with some laxative properties. A *Syrup of pale rose* is prepared with them, P. (Juice of pale roses and sugar, equal parts.)——*Syrupus rosæ*, L. (Petals of roses, 1; sugar, 3; boiling water, 4), which is frequently employed as a purgative for children, in the dose of ʒij. to ℥j. They enter also into the composition of the *Rose ointment*, P. (Fresh petals of roses, 2; axungia, 1;) which is applied over excoriated nipples, or chapped lips. Finally, and this is their most general employment, they are used for preparing the *Distilled water of roses*, P., *Aquarosæ*. L., E., D., P., U. S., Pr., Pol., A., R., F., B., which is used as a menstruum and aroma for certain medicinal preparations.

The Flowers of the Common Peach Tree, *Persica vulgaris*, are of a slightly bitter taste, and they purge gently without griping. They are given in an aqueous infusion, in the dose of ʒij. to ʒiv. to ℔j. of water, and a syrup is prepared from them, *Peach flowers syrup*, P. (Fresh peach tree flowers, 4; boiling water, 12; sugar, 17. It is a common purgative for children.

Linum catharticum, Lin. A small indigenous annual plant. of the family *Linaceæ*, growing in meadows, was formerly administered in infusion. Dose, from ℥ij. to ℥iv. to ℔j. of water; but its action is so weak and uncertain that it is now almost obsolete.

CHAPTER XII.

TEMPERANT OR REFRIGERANT REMEDIES.

The name of *Refrigerant, (refrigerare*, to cool), is given to substances which moderate the too great activity of the organs, and act more especially by diminishing the rapidity of the circulation, and the production of animal heat. They are called also *antiphlogistic*.

All the remedies belonging to this class possess an acid taste more or less marked. Their local action upon the tissues, and especially on the mucous membranes, induces a contraction of the capillary vessels, paleness of the parts, &c. When taken into the circulation, their proximate action is scarcely appreciable in a healthy state; but it is more marked when the circulation is active, the animal heat increased, and, in a word, when the functions are in a state of morbid excitement. If administered then in a proper manner, they lessen the force and frequency of the pulse, moderate the animal heat, quench the thirst, increase the cutaneous perspiration, and the secretion of urine; in a word, they diminish all the febrile symptoms. Taken in large doses, they may irritate the digestive organs, and occasion alvine evacuations. It has been observed that, when their employment are too long continued, they are apt to produce debility of the digestive organs, general emaciation, paleness of the skin, &c. When the stomach is the seat of a slight irritation, the use of refrigerants may subdue it; but if any ulcerations, or other serious organic lesions have taken place, these remedies produce a bad effect on the state of the patient.

The refrigerant remedies are indebted for their virtues to the presence of a weak acid, such as the citric, malic, tartaric, acetic, &c., edulcorated with a large proportion of water. Most of these are of a vegetable nature; their component elements, if we except their acid, are nearly the same, and their action on the economy is very similar, so that they may be employed almost indifferently.

REFRIGERANT MINERAL SUBSTANCES.

Boric or Boracic Acid. *Acidum boracicum.* Homberg's sedative salt. It is found in the waters of several lakes of

Tuscany, and combined with soda in the state of *borate* in India and Thibet.

P. P. This acid is solid, in the form of white scales, soft to the touch, inodorous, of a slight acid taste, and of a specific gravity of 1.479.

C. P. Boracic acid contains 27 of boron, 73 of oxygen, and about 40 per cent. of water of crystallization. Heated, it melts, loses its water, and changes to a hard, transparent, and unalterable glass. It dissolves in 13 of boiling, and 35 of cold water. It is very soluble in alcohol.

Prep. It is obtained by the decomposition of the common borax of the shops by sulphuric acid.

Th. E. It was formerly highly valued as a cooling medicine, but is now very seldom employed except as a gargle in gangrenous affections of the pharynx, and of the amygdalæ.

D. & M. of Adm. Gr.vj. to ʒj. to ℔ij. of water, as a lemonade.——*Sedative mixture*, Paris H. (Boric acid, ʒj.; simple syrup, ℥jss.; infusion of lime tree flowers, ℥iv.) Dose, by table-spoonfuls.

Nitrate of Potass. (See page 212.)

REFRIGERANT VEGETABLE SUBSTANCES.

Vinegar, or Impure Acetic Acid. *Acetum vini*, seu *Acidum aceticum dilutum*. This acid exists in a great number of vegetables, either free, or combined with potassa.

P. P. Common vinegar is a limpid liquid, of a yellow or red colour, more or less intense, according as it has been prepared from red or white wine; it possesses a pure acid taste, and a sharp, agreeable odour. The *pure acetic acid*, generally called *radical vinegar*, is liquid, but it congeals in a crystalline mass at 13° Centig. (50° Fahr.) Its taste is caustic, its odour very strong and penetrating, and its specific gravity is 1.063.

C. P. The anhydrous acetic acid, according to Messrs. Gay-Lussac and Thénard, is formed of carbon, 50.224; oxygen, 44.147; and hydrogen, 5.629. Vinegar contains acetic acid, a good deal of water, mucilage, a colouring extractive matter, frequently malic and tartaric acids, sulphates of lime and potassa, and a small quantity of alcohol. That which is obtained from the distillation of wood contains almost always a small quantity of empyreumatic oil. Heated, this acid volatilizes without decomposition, and boils below 100° Centig. (212° Fahr.) It attracts the moisture of the air, is very soluble in water, less so in alcohol, and it forms soluble salts with most bases.

Prep. Vinegar is commonly prepared in France by exposing wine to the contact of the air, in large casks, in a temperature of from 15° to 20° Centig. (59° to 68° Fahr.) As for the concentrated acetic acid, it is obtained by distillation from the acetate of copper. In this country, vinegar is prepared chiefly from malt, the infusion of which is first fermented with yeast, then placed in warm situations, to undergo the acetous fermentations.

Th. E. The concentrated acetic acid is never exhibited internally. Its employment is confined to inhaling its vapour in cases of syncope, &c. Vinegar, taken internally, in its pure state, causes pains and cramps of the stomach, and its use continued for any length of time, produces emaciation, anorexia, &c. Diluted with water, so as to render it palatable, it no longer irritates the stomach, but its particles are taken into the circulation, and then act as a refrigerant. Consequently, it is administered with success in cases for which these remedies are indicated. It is also employed in gargles, and, externally, as a detersive, a refrigerant, and a resolvent. The exhibition of vinegar is often recommended in cases of poisoning by narcotic substances; but Dr. Orfila has demonstrated that as long as the poison remains in the stomach, it is apt to facilitate its absorption, and to increase its activity; whilst, when the poisonous substance has been expelled from the stomach, its employment is then very beneficial. Vinegar is very frequently used, and is employed as a menstruum for a great number of remedial substances.

D. & M. of Adm. ʒss. to ℥ij., or rather a sufficient qantity to form an agreeable acid drink, to ℔ij. of water sweetened with sugar or honey.—P. *Oxymel simplex*, L., D., R., Den., Pol., F., Pr., B. (Vinegar, 1; honey, 2.) Dose, from ʒij. to ℥j. and more, in an aqueous drink.——*Syrupus aceti*, D., P. (Vinegar, 4; sugar, 7.)—A., R. (Vinegar, 1; sugar, 2.) Dose, from ℥j. to ℥ij. to edulcorate temperating drinks.——*Acetic gargle*, Paris H. (Strong vinegar, q. s.; honey of roses, ℥j.; barley water, ℥iv.)

Tartaric Acid. *Acidum tartaricum*. It is found in nature, only in combination with potassa or lime.

P. P. This acid is solid, and crystallizes in large scales slightly divergent, or in flattened prisms: it is unalterable in the air, colourless, inodorous, and of a very acid taste.

C. P. It is composed, according to Messrs. Gay-Lussac and Thénard, of carbon, 24.050; oxygen, 69.321; and hydrogen, 6.629. Heated, it melts, swells up, and decomposes. Water and alcohol dissolve it. Its aqueous solution becomes easily mouldy. It reddens the tincture of litmus.

Incomp. Subst. Lime water, the salts of baryta and strontia, and acetate of lead.

Prep. The super-tartrate of potassa is decomposed by means of carbonate and hydro-chlorate of lime; then the insoluble tartrate of lime, obtained by this process, is acted on by diluted sulphuric acid, which forms with the lime an insoluble salt, and liberates the tartaric acid, which is dissolved in water in order to obtain it in crystals.

TH. E. In small doses, tartaric acid is a refrigerant medicine, which may be exhibited with great advantage in cases of gastric irritation, in fevers, &c. In large doses, it acts as an irritant, and may induce serious accidents.

D. & M. OF ADM. Powder, gr.v. to xv. with sugar; in solution, ʒss. to ʒj. to ℔j. of water.——*Syrupus acidi tartarici*, P. (Tartaric acid, 5; simple syrup, 250; distilled water, 16.) Dose, from ℥j. to ℥ij. to ℔ij. of water.——*Lemonade of tartaric acid.* (Tartaric syrup, ℥ij.; water, ℔ij.) by half tumblerfuls.

Family Aurantiaceæ.

LEMON. ***Fructus citri medicæ.*** Fruit of the *Citrus medica*, Lin. A tree native of warm climates, and cultivated in hot-houses in temperate and northern regions.

B. C. Trunk straight, slender; leaves oval, acuminate, dentate, of a yellowish-green, supported by an unwinged peduncle; flowers numerous, of a violet-red colour externally, otherwise similar to those of the orange-tree; fruit ovoid, and terminated by a conical apex.

P. P. The lemon, the peel of which we have already described, contains a considerable quantity of juice of an acid and agreeable taste, and of a very pleasant odour.

C. P. According to M. Proust, lemon juice contains citric acid, 1.77; bitter principle, gum, and malic acid, 0.72; and water, 97.51.

INCOMP. SUBST. The sulphuric, nitric, oxalic, and tartaric acids, and lime water.

TH. E. In small doses, lemon juice stimulates the stomach and facilitates digestion. Diluted with water, it is employed with great success as a refrigerant in inflammatory diseases. Dr. Broussais remarks that it is, of all the acidulous substances, that which suits best the stomach, when this organ is labouring under an acute phlogosis. It is also very useful in stopping certain irritations of the stomach in which there is a constant vomiting. Its administration is recommended in jaundice, particularly in scurvy, and generally in all kinds of febrile diseases in which the thirst is great, and the animal heat very much increased.

D. & M. OF ADM. *Lemonade*, PARIS, H. (Lemon, No. j.; simple syrup, ℥ij.; water, ℔ij.)——*Lemon syrup*, P. (Lemon juice, 4; sugar, 7.)——*Syrupus limonum*, L., D. (Lemon juice, 2; sugar, 3.)——*Syrupus succi seu acetositatis citri*, R., F., POL., DEN., PR. (Lemon juice, 1; sugar, 2.) Dose, from ℥j. to ℥ij. in a watery menstruum. Lemon juice enters into the composition of effervescent draughts, such as Rivière's anti-emetic mixture.——*Julepum succi limonuim* Guy's H. (Lemon juice and green mint water, āā. equal parts.) Dose, ℥j. in sweetened barley water, three or four times a day.

Orange. *Malum aurantii.* Fruit of the *Citrus aurantium*, Lin., the peel which we have described, contains a juice which differs from that of lemon only in its being less acid, more sweet and bitter. It is, however, composed of the same principles. Diluted with water, and properly edulcorated, it is frequently used under the name of *orangeade*, in inflammatory diseases. A syrup made with this fruit, possessing the refrigerant properties, is also sometimes employed.

Citric Acid. *Acidum citricum.* It exists in variable proportions in the lemon, orange, and the red acid fruits.

P. P. This acid is white; it crystallizes in rhomboidal prisms; it is unalterable in the air, inodorous, of a very acid taste. Specific gravity, 1.034.

C. P. According to Messrs. Gay-Lussac and Thénard, it is composed of carbon, 33.81; oxygen, 59.859; and hydrogen, 6.330. Heated, it decomposes, and partly changes into a new acid, called *pyro-citric*. It is very soluble in boiling water, and in three-fourths of its weight of cold water. Alcohol dissolves a smaller proportion. The aqueous solution, concentrated in a small degree, is easily altered on exposure to the air.

Prep. It is obtained by saturating the lemon juice with pulverized chalk, and treating the insoluble citrate which is formed, by diluted sulphuric acid.

Th. E. It is employed instead of lemon juice for making lemonades, and it acts then like the other refrigerant medicines. In large doses, and concentrated, it may produce serious accidents, on account of its caustic action.

D. & M. of Adm. ℈j. to ℔j. of sweetened water.——*Citric acid lozenges*, P. (Citric acid, 6; essential oil of lemon, 1; sugar, 390; mucilage of gum tragacanth, q. s., for 12gr. lozenges.)

Red and White Currant. *Fructus grossulariæ.* Fruit of the *Ribes rubrum*, Lin. A native shrub, cultivated very extensively in our gardens.

B. C. Stem straight, without thorns; leaves five-lobed, dentate, pubescent; flowers in pendulous clusters; calix almost plane; anthers didymous, style bifid; ovary inferior; fruit, a globular berry, white or red, umbilicate and polyspermous.

P. P. The properties of the currant are too generally known to require description.

C. P. When ripe, it contains malic acid, 2.41; citric acid, 0.81; sugar, 6.24; gum, 0.78; animal matter, 0.86; lime, 0.29; woody fibres and seeds, 8.01; water, 81.10.

Th. E. The same as that of the preceding substances.

D. & M. of Adm. Expressed juice, from ℥ij. to ℥iv. to ℔ij. of sweetened water. ——*Syrupus ribium*, P., Den., Pol., B., A. Dose, from ℥j. to ℥ij., and more for edulcorating refrigerant drinks.——*Currant jelly*, P. Any quantity.

Family Urticeæ.

Mulberry. ***Fructus mori nigræ.*** Fruit of the *Morus nigra*, Lin. A tree, native of Persia, and cultivated in this country.

B. C. Trunk from twenty-five to thirty feet high; leaves alternate, cordiform, pubescent; flowers uni-sexual, generally dioicous, without a fleshy involucrum; calix four-divided, becoming fleshy; male flowers, in a spike; female, distinct and ovoid; ovary lenticular and monospermous; two sessile stigmas; fruit becoming nippleform, by soldering laterally together.

P. P. Mulberries are ovoid berries, of a blackish red colour, containing a viscous juice of the same colour, of an acidulous and agreeable taste.

C. P. They contain a good deal of mucilage, sugar, tartaric acid, &c.

Th. E. These berries are less active than the preceding substances; they are employed in the same cases. The syrup of mulberry is often used in the treatment of anginæ and aphthæ.

D. & M. of Adm Expressed juice, any quantity in sweetened water.—*Syrupus*, L., P. (Mulberries and sugar, āā. e. p.) Dose, from ℥j. to ℥ij., and more.

Family Polygoneæ.

Sorrel. ***Acetosæ folia.*** ***Rumex acetosa***, Lin. A perennial native plant, growing in meadows, and cultivated in gardens.

P. U. The leaves.

B. C. Root repent, brown; stem herbaceous, from one to three feet high; radical leaves petiolate, oval, obtuse, entire; the caulinary sessile, acute, amplexicaule; flowers small, greenish, in terminal panicles; calix six-lobed, tubulated at the base; six stamina inserted on the calix; three glandulary stigmas; fruit, a capsule with three prominent angles.

P. P. All the parts of this plant are acid, and have an agreeable taste.

C. P. They contain a large quantity of super-oxalate of potassa, some tartaric acid, mucilage, and fecula. Water dissolves their active principles.

Th. E. Sorrel is daily used as an aliment. Its pleasant acidity has caused it to be ranked among the refrigerant medicines. Boiled in water, it communicates to it a sour taste, and it is frequently employed in this way to facilitate the action of purgatives.

The expressed juice of this plant has been recommended as a powerful anti-scorbutic, and its leaves bruised and boiled are frequently used as a maturative poultice.

D. & M. of Adm. Decoction, manip. j. to ij. to ℔ij. of water.——*Vegetable broth.* (Sorrel, leek leaves, chervil, and lettuce, āā. any quantity; fresh butter and salt, q. s.; water ℔ij. to ℔iv.) By cupfuls.——*Refrigerant and diuretic juices,* P. (Sorrel, lettuce, chervil, and house-leek, āā. e. p.) Dose, from ℥j. to ℥ij.——*Conserva acetosæ,* R. (Sorrel, 1; sugar, 2.)

Oxalic Acid. *Acidum oxalicum.* It exists in the juice of several vegetables, most commonly combined with lime and potassa.

P. P. This acid is solid, in the form of prismatic, quadrangular, elongated, transparent, and inodorous crystals, and of a caustic taste.

C. P. According to Messrs. Gay-Lussac and Thénard, oxalic acid is formed of carbon, 26.556; oxygen, 7.689; and hydrogen, 2.745. It is soluble in water and alcohol, and more so when hot. Its crystals, by dissolving in cold water, produce a slight noise, which may be a test to recognize this substance. Heated, it melts in its water of crystallization, volatilizes, and is decomposed.

Incomp. Subst. All the salts of lime.

Prep. It is obtained from the decomposition of the superoxalate of potassa by the acetate of lead. The precipitate is treated with hydro-sulphuric acid, and the liquor left to crystallize.

Th. E. Concentrated, and in large doses, it acts on the economy as a most violent corrosive poison. Nevertheless, Drs. Coindet and Christison have ascertained, by numerous experiments, that this acid, diluted with water, is readily absorbed, and that it exercises a very deleterious influence on the brain and the spinal marrow, and that this action is so much the more marked and rapid in proportion as it is less concentrated. In very small doses, and dissolved in a large quantity of water, it is occasionally employed as a refrigerant; but it is better to use the tartaric acid.

D. & M. of Adm. Gr.xii. to ℈j. to ℔ij. of sweetened water.——*Oxalic acid lozenges,* P. Oxalic acid, 6; essential oil of lemon, 1; sugar, 388; mucilage of gum tragacanth, q. s. for twelve-grain lozenges.

The Salt of Sorrel, or Bi-oxalate of Potassa. *Potassæ* *super-oxalas*, which is furnished by several species of Rumex, especially the *R. acetosella*, Lin., and of the *Oxalis acetosella*, Lin., is white, in small, acute, and even prickly crystals, opaque, unalterable in the air, and of an acid and slightly bitter taste. It is soluble in water, and is decomposed by the salts of lime, which form instantly with it an insoluble oxalate. Its action is the same as that of the oxalic acid, only it is less energetic. It has been sometimes administered as a refrigerant in the dose of ʒss. to ʒj. to ℔ij. of sweetened water, and is the base of *Fascio's dry lemonade* (Bi-oxalate of potassa, ʒiij.; sugar, ℔ij.; essential oil of lemon, gutt. viij.), of which ℥j. is dissolved in ℔j. of water, for common drink in febrile diseases.

Several fruits of an acidulous and saccharine taste are also used as cooling and refrigerant substances, but as they are still more used as light aliments, and of course generally known, we shall abstain from giving a description of them. Such are, in the family *Rosaceæ*, the STRAWBERRIES, fruit of the *Fragaria vesca*, Lin.; the RASPBERRIES, furnished by the *Rubus idæus*, Lin.; CHERRIES, fruit of the *Cerasus vulgaris*, Miller; several species of APPLES, furnished by the *Pyrus malus*, Lin.; the fruit of the *Berberis, vulgaris*, Lin., of the family *Berberideæ;* the POMEGRANATE, furnished by the *Punica granatum*, Lin., belonging to the family *Myrtineæ, &c.*

With the juice of the above-mentioned fruits, very agreeable acidulated drinks are prepared, as well as syrups, which are used during the winter, for sweetening and acidulating refrigerant drinks.

CHAPTER XIII.

DEMULCENT REMEDIES.

DEMULCENTS (*demulcere*, to soften,) are remedies, the action of which has a tendency to relax the tissues with which they come in contact, to lessen their tonicity, and blunt their sensibility.

These substances possess both nutritive and medicinal properties. They are generally inodorous, and their taste is insipid, viscous, or sweet. Their mode of action seems to be the same whether applied to the skin or introduced into the digestive canal, and to depend, mostly, on the water, which is their common menstruum. In the first instance, they appear to relax the cutaneous tissue, to swell it, to diminish its redness and sensibility, and to subdue more or less completely the inflammatory symptoms of which it is the seat. In the second place, they produce similar changes in the parts with which they come in contact, and abate the internal heat, thirst, cough, &c., at the same time that they prove a light aliment, well suited to the inflammatory state of the organs.

Although the most marked effects of demulcents are local, still they have others which deserve notice. In fact, the relaxing action of these remedies seems to be susceptible of being transmitted by contiguity of organs, as we have already mentioned. Their internal administration, continued for a certain time, produces also effects more or less debilitating on the general economy. Thus, they frequently diminish the strength and frequency of the pulse, and they subdue the irritation of organs distant from those with which they are in contact. These secondary effects are principally owing to the sympathies which they induce, and to the absorption of the large quantity of water in which they are administered. For, by the digestive action of the stomach, these substances are changed into chyme, and we know from numerous and accurate experiments, that the increase of the proportion of water in the blood, relatively to that of the red globules, is a powerful means of lessening the vital energy.

All the demulcent remedies are furnished by organic substances containing certain proximate principles, to which they are indebted for their properties, and of which we shall notice the general character in order to avoid repetitions. The most conspicuous are—

GUM. *Gummi*, which is found in variable proportions in every part of herbaceous plants, in fruit, leaves, and in a considerable number of roots and woody stems. It is not always perfectly identical in its composition. However, this principle is always solid, uncrystallizable, inodorous, insipid, soluble in water, and forming with it a kind of jelly, called *mucilage*; it is insoluble in alcohol, by which it is precipitated from its solutions. It is decomposed by nitric acid, and changed partly into mucic acid.

SUGAR. *Saccharum*. A principle contained more or less profusely in vegetables, having a sweet taste, and which, by the action of water and leaven, is decomposed, and changed into alcohol and carbonic acid by undergoing a number of changes, constituting the *vinous fermentation*. We distinguish several kinds of sugar, viz.: the *common* or *cane sugar*, which is furnished by the sugar cane, the red beet, the sugar maple, &c.; the *grape sugar*, which exists in most fruit, the mushroom sugar, &c.

FECULA OR STARCH. *Fecula*, exists in considerable proportions in the seeds of all the *leguminosæ*, *gramineæ*, and in several roots. This substance is white, pulverulent, inodorous, and insipid, composed of oxygen and hydrogen, in suitable proportions to obtain 56 of water, and 43 of carbon. It is insoluble in cold water, alcohol, and ether; it dissolves in boiling water, and forms then a hydrate, called *starch*. Weak nitric acid dissolves it cold; but when hot, changes it into the malic, oxalic, &c., acids. By the action of very diluted sulphuric acid, and the agency of heat, fecula is changed into a substance nearly similar to grape sugar; finally, it forms with iodine a combination of a fine blue colour.

FIXED OR FATTY OILS. *Olea fixa*, exist in considerable quantity in the seeds of several plants. They are not perfectly similar to each other; but, in general, they are liquid at the common temperature, viscous, of a yellowish colour, of a weak and sometimes very disagreeable taste, and of less specific gravity than water. They are composed of *stearine*, a fatty substance, solid at the ordinary temperature; of *elaine*, another fatty substance, liquid at the same temperature; and lastly, of a little colouring and odorous matter; but the proportion of these substances differs in the different oils. They are insoluble in water; but they become miscible with this liquid with the assistance of gum, or albumen, &c. Several of them will dissolve more or less completely in alcohol and ether. They become rancid by the protracted action of the air, and they form, with the alkalies, compounds, soluble in water, called *soaps*.

ANIMAL OILS. Their properties and composition differ but little from those of the fixed oils.

ALBUMEN. *Albumen* is found in all the soft parts of animals, and forms almost alone the white of eggs, part of the serum of the blood, &c. Its properties differ according as it is liquid or solid. The liquid albumen is viscous, transparent, colourless, heavier than water, slightly alkaline, owing to the small proportion of soda it contains, and very soluble in water. Heat and alcohol coagulate it, and render it solid, white, insoluble in water, soluble in the alkalies and in acetic acid. It is composed of carbon, 52; oxygen, 23; hydrogen, 7; and nitrogen, 15.

GELATINE. *Gelatina*, is never found in the humours of animals, but enters, in large proportion, into the composition of their soft and solid parts. In the dry state it is known in commerce by the name of *Glue*. It is very little soluble in cold, but dissolves easily in boiling water, from which it is precipitated by alcohol, tannin, &c. The solution of gelatine forms, on cooling, a jelly more or less thick.

The demulcent remedies are employed with much advantage to subdue internal as well as external inflammation. From what we have said above, it follows that these substances would be contra-indicated in cases of atony, and towards the end of certain chronic diseases maintained by general debility. They are administered in the form of tisans, loochs, &c., internally; and of cataplasms, lotions, &c., externally.

VEGETABLE DEMULCENT SUBSTANCES.

Family Léguminosæ.

GUM ARABIC. *Gummi arabicum*. A proximate principle, which exudes from the *Mimosa nilotica*, Lin., a tree growing on the banks of the Nile, &c.

B. C. Trunk from thirty to forty feet high, ramose; leaves bi-pinnate, composed of ten *pinnulæ*, supporting each about twenty pairs of small and oval folioles; flowers yellow, small, united in a capitulum, in the axilla of the leaves; stamina very numerous, monadelphous, two of them much longer than the calix; fruit, a long and narrow pod, offering from seven to eight strangulations, each containing one seed.

P. P. Gum arabic is found in commerce, in dry and semitransparent pieces of various sizes, rugose and slightly cracked on the surface, friable, irregularly round, colourless, or yellowish, inodorous, of a sweet and viscous taste. Specific gravity, 1.515.

C. P. It is composed, according to Messrs. Gay-Lussac and Thénard, of carbon, 42.23; oxygen and hydrogen in suitable proportions to form 57 of water. It contains, besides, a small quantity of saline substances; otherwise its chemical properties do not differ from those of gums in general. (See page 394.)

Th. E. Among the demulcent substances, gum arabic is the one most frequently used in the practice of medicine. It is found useful in acute phlegmasia, especially that involving either the digestive, pulmonary, or urinary organs. It enters into the composition of a great number of officinal preparations.

D. & M. of Adm. Powder, ʒss. to ʒj. in a mixture.——*Solution of gum arabic*, Paris H. (Gum arabic, ℥ss. to ℥j.; water, ℔ij.; as a common drink.)——*Mucilago acaciæ*, L. *Mucilago gummi arabici*, E., D., P., B., F., A. (Gum arabic, 1; boiling water, 2.) It is commonly employed as a menstruum for other substances.——*Gummous mixture*, Paris H. (Gum arabic, ʒj.; water, ℥iij.; simple syrup, ℥j.; orange-flower water, ʒij.;) by table-spoonfuls.——*Mistura mucilaginosa*, Guy's H. (Mucilage of gum arabic, ℥viij.; mixture of gum ammoniac, ℥ij.; mint water, ℥v.; simple syrup, ℥j.) Dose, ℥ij., three or four times a day.——*Emulsio acaciæ arabicæ*, E. (Mucilage of gum arabic, ℥ij.; sweet almonds, ℥j.; sugar, ℥ss.; water, ℔ij.)——*Emulsio arabica*, D. (Gum arabic pulverized, ʒij.; bleached sweet almonds, purified sugar, āā. ℥ss.; decoction of barley, Oj.)——*Emulsio gummosa*, F. (Gum arabic, 1; simple emulsion, 24; water, q. s.) Dose, from ℥ij. to ℥iv. and more, several times in the day.——*Gummous looch*, Paris H. (Gum arabic, ℥ss.; simple syrup, ℥j.; pectoral infusion, ℥iv.)——*Pectoral julep*, Paris H. (Gum arabic, ʒj.; althæa syrup, ℥ss.; water, ℥iv.)——*Alkaline gummous powder*, or *Vegetable soap*, P. (Gum arabic, 8; crystallized carbonate of potassa, 1.) Dose, from gr.xii. to xx. and more.——*Pulvis gummosus*, B., A., Pr. (Gum arabic, gum tragacanth and sugar, āā. equal parts.) Dose, from ʒj. to ʒij., every two or three hours.——*Gum arabic paste*, commonly called *Althæa paste*, P. (Gum arabic and sugar, āā. 8; fresh althæa root and orange-flower water, āā. 1; water, 45.;) any quantity.——*Syrupus gummi arabici*, P. (Gum arabic and water, āā. 1; simple syrup, 4.) Dose, ℥j. and above, for edulcorating demulcent drinks.——*Trochisci gummosi*, E. (Gum arabic, 4; starch, 1; sugar, 12; rose water, q. s.;) any quantity.

Gum Senegal. *Gummi senegalense*, furnished by the *Mimosa senegal*, Lin., a tree very nearly related to the preceding, and growing in the torrid regions of Africa. It does not differ materially from gum arabic with respect to its physical and chemical properties. It is now more plentiful in commerce than gum arabic, and is at present employed under the same name.

As for the Common Gum, *Gummi nostras*, which exudes spontaneously from several trees of the family *Rosaceæ*, such as the plum, cherry, apricot trees, &c., it differs principally from those we have just mentioned, by its not being completely soluble in water, and by forming with this liquid a thicker mucilage. It is very seldom employed, and only when the others cannot be procured.

Gum Tragacanth. *Tragacanthæ gummi.* A gummous juice furnished by the *Astragalus gummifer*, Labillardière, and *A. verus*, Olivier; shrubs growing in Asia Minor, and several other countries in the East Indies.

B. C. Stem furnished with sharp thorns, from two to three feet high; leaves composed of six to eight pairs of small and hairy folioles: flowers small, yellow, sessile, in a dense spike; calix tubular, five-toothed; corolla papilionaceous; five petals; ten diadelphous or monadelphous stamina; fruit, a pod divided in two cells by a false dissepimentum.

P. P. Gum tragacanth is solid, opaque, white, or yellowish, not friable, in thin and more or less large contorted pieces, or in minute filaments, assuming the form of a worm, or finally, in amorphous lumps, without odour or taste.

C. P. It is composed, according to Bucholz, of 57 of a gum similar to gum arabic; of 43 of a substance insoluble in cold water, but completely soluble in this menstruum when boiling, and in potassa, ammonia, and hydro-chloric acid, which substance has been called *adragantine*, (tragacantine.) One part of gum tragacanth forms with water a mucilage as viscous as twenty-five of gum arabic.

Th. E. This substance possesses the same properties as gum arabic. It is chiefly employed in order to give consistence to sundry pharmaceutical preparations, and to suspend in solution some insoluble powders.

D. & M. of Adm. Powder, from gr.x. to xv. in a looch or julep of ℥iv.——*Mucilago tragacanthæ*, P., B., A. (Gum tragacanth, 1; water, 14.)—L., D. (Gum tragacanth, 1; water, 32.) Dose, from ℥j. to ℥ij.——*Pulvis tragacanthæ compositus*, L. (Gum tragacanth, starch, and gum arabic, āā. 3; sugar, 7.) Dose, from ʒss. to ʒij., in a menstruum.

Liquorice. *Liquiritiæ radix. Glycyrrhiza glabra*, Lin. A shrub, native of the south of France, Spain, Italy, &c., but now growing abundantly in England.

P. U. The root.

B. C. Stem straight, glabrous, from three to four feet high; leaves imparipinnate, with thirteen oval folioles, covered with a viscous substance; flowers violet, in axillary spikes; calix tubular, bilabiate, unequally five-toothed, carena formed of two distinct petals; ten diadelphous stamina; fruit, a flattened pod containing from three to six seeds.

P. P. The liquorice root is long, cylindrical, of the size of the finger, brownish externally, yellow internally, of a sweet taste, slightly acrid, and of a faint smell.

C. P. It contains, according to M. Robiquet, a peculiar saccharine substance, which cannot be fermented, called *glycyrrhizine;* a matter analogous to *asparagine*, but crystallizable; starch, albumen, a resinous oil, thick and acrid; some phosphate and malate of lime and magnesia, and lignous fibres. Cold water dissolves its sugary and demulcent principles; but it does not take up the acrid oil, which dissolves only in warm water.

TH. E. Liquorice is used to edulcorate demulcent drinks. The powder is also frequently used as excipient of other remedies.

D. & M. OF ADM. Powder, gr.xij. to ʒj.; cold infusion, ʒij. to ʒiij. to ℔ij. of water.——*Extractum glycyrrhizæ*, L., D., P. Dose, from ℥ss. to ℥j.——*Liquorice paste*, P. (Extract of liquorice and sugar, 384; gum arabic, 768; orris root, 3; essential oil of aniseed, 1.)——*Trochisci glycyrrhizæ glabræ*, E. (Extract of liquorice, gum Arabic, āā. 1 part; refined sugar, 2 parts; boiling water, a sufficient quantity.)——*Trochisci glycyrrhizæ cum opio*, E., U. S. (Opium, ʒij.; tincture of balsam of tolu, f.℥ss.; simple syrup, f.℥viij.; extract of liquorice softened by hot water, gum Arabic in powder, āā. ℥v.) To form in troches, each weighing 10 grains.

MELILOT. *Melilotus officinalis*, Lam. An annual native plant, common in meadows and hedges, and possessing a very agreeable and fugacious smell, and some demulcent properties. Its decoction is used occasionally in lotions and injections.

Family Ulmaceæ.

SLIPPERY ELM. *Ulmus fulva*, Mich. *U. rubra*, Muhl. *U. aspera*, Marsh. A tree of moderate size, a native of North America.

P. U. The inner bark.

B. C. Stem seldom above thirty feet high, trunk slender, dividing in numerous branches, furnished with a rough and light-coloured bark; leaves oval-oblong, acuminate, serrate, pubescent on both sides, almost equal at the base; buds tomentose, of a tawny colour; flowers red, sessile, succeeded by membranous seed-vessels, of a compressed and oval shape, containing one oval seed.

P. P. The bark of the young branches is of a whitish-yellow, extremely mucilaginous and devoid of any sensible astringency; that of the old branches is thicker, of a darker colour, slightly mucilaginous and astringent.

Th. E. The decoction, or infusion of this bark, has been very usefully employed as a demulcent, in affections of the urinary passages, and in some diseases of the alimentary canal. In dysentery, diarrhœa, and cholera infantum, it has proved a very efficient medicine. It has been exhibited also with success in catarrhal affections, pneumonia, and consumption.

The internal use of the decoction of the bark has been found very efficacious in lepra vulgaris, and in other varieties of cutaneous diseases; but is seldom found to show its good effects in these complaints before its use has been continued for several months. The more diuresis it produces the more certain is its beneficial operation. This bark, pulverized, has been used boiled with water or milk in the form of pap, as a light nourishment for children affected with diarrhœa, dysentery, &c. One drachm of the powder, boiled with water or milk, and sweetened with sugar, forms a common basonful of this pap.

As an external application to gun-shot wounds it was used by the surgeons of the revolutionary army. Poultices made of the bark were applied to the wounds, which were soon brought to suppuration, and to a disposition to heal.

Family Malvaceæ.

Marsh Mallow. *Althææ radix, folia et flores. Althæa officinalis.* A perennial indigenous plant, growing on the banks of rivers and marshy places, and flowering in June and July.

P. U. The root, leaves, and flowers.

B. C. Stem herbaceous, from three to five feet high; leaves cordiform, tomentose, smooth; flowers of a rose-white colour, in panicles at the top of the stem; calix double, the exterior nine-divided, the interior five-divided; ovary free; rounded; style simple; fruit, monospermous capsules, united in a circle at the base of the style.

P. P. The marsh mallow root, such as is found in commerce, is stripped of its epidermis; it is fusiform, fleshy, of the size of the finger, of a white colour, inodorous, and of a viscous taste.

C. P. All the parts of this plant, and the root especially, contain a large quantity of gum and fecula. Boiling water takes up its principles.

Th. E. The marsh mallow possesses demulcent properties in the highest degree. It is an emollient substance, commonly used as well internally as externally, in the treatment of phlegmasiæ.

D. & M. OF ADM. Decoction, ℥j. to ℔ij. of water.——*Decoctum althææ officinalis* E. (Althæa root, 2; dry raisins, 1; water, 42.) Dose, by cupfuls.——*Syrupus althææ*, P. (Althæa root, 3; sugar, 96; water, 32.)——L., E., PR., F., R. DEN. (Althæa 6; water and sugar, āā. 72; orange-flower water, 1.) Dose, from ℥j. to ℥ij. to edulcorate emollient drinks.——*Pasta althææ, Pàte de guimauve*, PR. POL., R. (Althæa root, 2; gum Arabic and sugar, āā. 12; orange-flower water, 1; boiling water, 48; white of eggs, q. s.)——*Trochisci althææ composita*, R. (Althæa, 2; orris root, 1; sugar, 36; mucilage of gum Arabic, q. s.)
Externally, decoction, in lotions, baths, injections, fomentations, &c.

The roots and leaves of the HOLLYHOCK. *Alcea rosea*, Lin., of the common MALLOW, *Malva sylvestris, &c.*, and many other plants belonging principally to the family *Malvaceæ*, possess the same properties, and may be employed to fulfil the same indication as the preceding.

CACAO OIL, or BUTTER. ***Butyrum*** seu ***Oleum cacao***, a fixed oil, obtained from the seeds of the *Theobroma cacao*, Lin., a tree, native of Mexico.

B. C. Trunk branchy, from thirty to forty feet high; leaves oval, acuminate, smooth; flowers reddish, united in extra-axillary bunches; calix caducous, deeply five-divided; ten stamina, five of which are sterile; fruit, an oval, and five-celled capsule; pericarp hard and undehiscent.

P. P. Cacao, several species of which are found in commerce, is generally of the form and size of an almond, brownish internally, of a sweet and agreeable taste, and of a peculiar odour. The oil obtained from it is concrete, of a yellowish-white, possessing the smell and taste of the almond itself.

C. P. The composition and chemical properties of this oil do not differ from those of the fatty oils.

PREP. This oil is obtained by expression, or by boiling the bruised cacao nuts in water. The oil floats on the surface.

TH. E. Cacao, after undergoing torrefaction, is employed in manufacturing chocolate, which, as an aliment, is in general use. The oil is employed as a demulcent in phlegmasiæ of the stomach, lungs, and urinary passages. It often proves beneficial in cases of cancer of the stomach. Externally, it is applied to hæmorrhoidal tumours, to chapped lips, and excoriated nipples.

D. & M. OF ADM. ʒj. to ʒij., in an emulsion, or in pills.
Externally, for suppositories, salves, &c.

Family Boragineæ.

BORAGE. ***Boraginis herba et flores.*** ***Borago officinalis***, Lin. A native biennial plant, very common in cultivated grounds, and flowering in May and June.

P. U. The leaves and flowers.

B. C. Stem herbaceous, straight, furnished with rough hair; radical leaves very large, oval; supported by long canaliculate petioles; caulinary leaves sessile, oval, lanceolate, and hairy; flowers blue, paniculate, distant from each other at the extremity of the branches; corolla rotate, orifice closed by six connivent, lanceolate, and acute processes; anthers close to each other.

P. P. Borage has hardly any smell; it possesses an herbaceous and mucilaginous taste.

C. P. It contains a mucilaginous substance, 18; a matter containing nitrogen, soluble in water, and insoluble in alcohol, 13; acetate, and other salts of potassa, 12; salts of lime, 0.5; and nitrate of potassa, 0.5 Water dissolves all its active principles.

TH. E. Borage is employed as a demulcent, diuretic, and sudorific, in a great number of inflammatory cases.

D. & M. OF ADM. Decoction and infusion, manip. j. to ij. to ℔ij. of water.——*Expressed juice*, P. ℥ij. to ℥iv.——*Extract*, P. ℈j. to ʒj.

COMPHREY. ***Consolidæ majoris radix et folia.*** ***Symphytum officinale***, Lin. A perennial native plant, growing in meadows, and flowering in May and June.

P. U. The root and leaves.

B. C. Stem herbaceous; leaves oval, lanceolate, acute; flowers white, or of a rose-colour, in spikes at the extremity of the branches, corolla tubular, furnished with five lanceolate and acute processes.

P. P. The root of this plant is large, elongated, blackish on the outside, white inside; at first of an insipid and mucilaginous taste, but becoming afterwards slightly astringent.

C. P. It contains a good deal of mucilage, and seems to contain also a little gallic acid, but in such a small quantity that it cannot have any influence on its mode of action.

TH. E. Comphrey is tolerably demulcent; its good effects in active hemorrhage of the lungs and intestines, &c. have been highly commended. Its supposed astringent virtues are now no longer believed in.

D. & M. OF ADM. Decoction, ℥ss. to ℥j. to ℈ij. of water.——*Syrup*, P. Dose, from ℥j. to ℥ij., in a mixture, or for edulcorating demulcent drinks.

Family Lineaceæ.

Linseed. Flax Seed. ***Lini semen, Linum usitatissimum,*** Lin. An annual plant, very generally cultivated.

P. U. The seeds.

B. C. Stem simple, about two feet high; leaves elongate, narrow, and pointed; flowers blue, terminal; calix persistent; corolla companulate; fruit, a spherical capsule, surrounded by the calix, and containing ten monospermous cells.

P. P. Linseed is small, oblong, flattened, shining, brown externally, yellowish-white and oily internally, of a viscous and sweetish taste.

C. P. It contains a large quantity of mucilage and fatty oil. Boiling water takes up the mucilage.

Th. E. Linseed is very frequently employed as an emollient. It is principally administered in decoction in phlegmasiæ of the urinary passages, in order to facilitate the secretion and to diminish the irritation existing in these parts. It is also given in inflammation of the lungs and of other organs. This seed, reduced to a coarse powder *(linseed-meal)*, is the base of the emollient cataplasms most commonly used.

D. & M. of Adm. Decoction, ʒss. to ʒj. to ℔ij. of water.——*Infusum lini*, L., E.——*Infusion of linseed*, Paris H. (Linseed, 2; liquorice, 1; water, 64 Dose, ℥ij., frequently repeated in the course of the day.——*Decoctum lini compositum*, Guy's H. (Infusion of flaxseed, ℔ij.; nitrate of potassa, ʒj.; manna, ʒ Dose, a tumblerful every now and then.

Externally. Decoction, in enema, lotions, baths, fomentations.——*Demulcent enema*, Paris H. (Flaxseed, ℥ij.; water, ℔ij.; olive oil, ℥ij.)——*Linseed* meal in cataplasms.——*Demulcent cataplasm*, Paris H. (Flaxseed and barley meals, āā. e. p.; decoction of marsh mallow, q. s.)

Linseed Oil, *Oleum lini*, is obtained from the seeds above described. It is limpid, of a deep or greenish-yellow colour, of a disagreeable taste and smell, and of the specific gravity of 0.932. Its composition is the same as that of the other fixed oils, except that it dries very quickly. For medicinal purposes it is prepared by cold expression; the common oil of the shops is obtained by torrefaction of the seeds, and its odour and taste are extremely unpleasant. This oil is demulcent and slightly laxative; it is seldom used internally on account of its disagreeable taste; however, it may be administered in doses of from ℥ij. to ℥iv. It is used in the preparation of sundry liniments.

Family Rosaceæ.

Sweet Almond. ***Amygdalæ dulces. Amygdalus communis.*** Lin. var *Dulcis*. A tree cultivated in the south of France.

Italy, Spain, and in the East Indies. P. U. The kernel of the fruit.

B. C. Trunk elevated, straight, ramose; leaves lanceolate, of a light green colour on both sides; flowers white or of a rose-colour, large, extra-axillary; calix tubular, reddish, caducous; twenty or more stamina; fruit, a fleshy drupe, furnished with a tomentose and dry pellicle, containing a rugose stone with one or two kernels.

P. P. The sweet almond is ovoid, depressed, formed of two white and oleaginous cotyledons, covered over with a brownish skin, odourless, and of a sweet and agreeable taste.

C. P. Sweet almonds are composed, according to M. Boullay, of fixed oil, 54; albumen, 24; liquid sugar, 6; gum, 3; water, 3.50; lignous fibres, 4; and acetic acid, 0.5; the skin contains tannin. Triturated with water, almonds produce a white mixture, called *emulsion* or *milk of almond*, which possesses a very remarkable analogy to animal milk. This liquid contains a great quantity of oil, kept in suspension in water by the presence of sugar, gum, and albumen.

Th. E. The milk of almond, as well as the other preparations made from this substance, is frequently exhibited to abate inflammation of the alimentary canal, lungs, and generally all febrile affections.

D. & M. of Adm. *Lac amygdalæ*, P. (Sweet almond and sugar, āā. 2; orange flower water, 1; water, 32.—D. (Blanched sweet almonds, ℥jss.; sugar, ℥ss.; water, Oijss.)——*Mistura amygdalarum*, U. S. (Almonds, ℥j.; refined sugar, ℥ss.; water, Oijss.)—L. (Almond confection, ℥ij.; distilled water, Oj.)——*Emulsio amygdali communis*, E. (Sweet almonds, ℥j.; sugar, ℥ss.; water, ℔ijss.)——*Emulsio amygdalarum*, R., F. (Sweet almonds, 4; sugar, 1; water, 32.) Dose, from ℥ss. to ℥j., frequently in the day.——*White looch*, P. (Sweet almonds and oil of sweet almonds, āā. 24; bitter almonds, 4; gum tragacanth, 1; sugar, 36; water, 192.) By table-spoonfuls.——*Confectio amygdalarum*, L. (Sweet almonds, 8; gum Arabic, 2; sugar, 5.) Any quantity mixed with water, for preparing instantly the milk of almond.——*Orgeat syrup*, P. (Sweet almonds, 16; bitter almonds, 8; sugar, 108; orange-flower water, 3; water, 64.)——*Syrupus amaygdalarum*, F. (Sweet almonds, 24; bitter almonds, 1; orange-flower water, 8; water, 96; sugar, q. s.)—Den., Pr., Pol. (Sweet almonds, 4; sugar, 18; orange-flower water, 1; rose-water, 12.) Dose, from ℥ss. to ℥j., to edulcorate refrigerant drinks.

Bitter Almonds contain, like the preceding, a large quantity of sweet oil, with a certain proportion of Prussic acid. They are not demulcent, and are seldom used, except to scent emulsions.

Oil of Sweet Almonds. *Oleum amygdalarum dulcium.* A fatty oil expressed from the sweet almonds.

P. P. It is liquid above 10° Centig. (50° Fahr.), of a greenish-white colour, of a smell analogous to that of sweet almonds, and of the specific gravity of 0.932.

C. P. This oil turns rancid with the greatest facility. Its composition does not differ from that of the fixed oils in general.

Prep. It is obtained by submitting the almonds to a powerful pressure, without the assistance of heat.

Th. E. This substance, taken in small quantity, acts as a demulcent. In larger doses it becomes laxative. It is frequently employed in inflammatory affections of the pulmonary organs. It is very useful as a gentle purgative for children or people of a delicate constitution. It enters into the composition of several officinal oily liniments and embrocations.

D & M. of Adm. ʒss. to ℥j. mixed with syrup or the yolk of eggs.——*Looch without emulsion*, P. (Oil of sweet almond, 18; gum tragacanth, 2; sugar, 36; orange-flower water, 9; water, 108.)——*Looch with the yolk of eggs*, P. (Oil of sweet almonds, 3; yolk of egg, 1; altheæa syrup, 2;) by spoonfuls.——*Oleaginous mixture*, Paris, P. (Oil of sweet almonds and pectoral infusion, āā. ℥ij; simple syrup, 1.)——*Linctus oleosus*, Guy's H. (Oil of sweet almonds, syrup of lemon, and conserve of roses, āā. ℥j.; compound powder of gum tragacanth, ʒiij.; by tea-spoonfuls.

Externally. *Simple cerate*, P. (Oil of sweet almonds, 3; wax, 1.——*Galen's Cerate*, P. (Oil of sweet almonds, 4; wax, 1; distilled rose-water, 3.)

Olive Oil. *Oleum olivæ*, obtained from the fruit of the *Olea europæa*, Lin., belonging to the family *Jasmineæ*, a tree, native of Asia, but cultivated on a large scale in the south of Europe. It is viscous, of a greenish-yellow colour, becoming solid a few degrees above the freezing point, of an agreeable taste and smell, and of the specific gravity of 0.9153. Its composition is the same as that of the other oils; it is not desiccative, and does not become rancid as easily as that of sweet almond. This oil is daily employed as an aliment. Its properties are emollient and demulcent, and in sufficient quantity it acts as a laxative. It is employed in inflammatory affections of the lungs and of the intestinal canal. It proves very beneficial in cases of poisoning by acrid substances, and is used with advantage as an anthelmintic. It is administered in the dose of from ʒij. to ℥j., mixed with water by means of mucilage. Finally, it enters into the composition of a great number of plasters and liniments which are daily used.

White Poppy Oil is obtained by expression from the seeds of the *Papaver somniferum*, Lin. It is sweet, and is used as an aliment. It may be employed in the same cases as those we have just described. The same is the case with the *walnut oil*, obtained by cold expression from the *Juglans regia*, Lin., a tree of the family *Juglandeæ*, a native of Persia, and cultivated throughout Europe.

Family Gramineæ.

SUGAR. *Saccharum.* A proximate principle existing in a great number of vegetables, but principally obtained from the SUGAR CANE, *Saccharum officinarum*, Lin., a native plant of Asia, naturalized and cultivated on a large scale in the West India Islands, and some parts of the American continent.

B. C. Stems straight, from twelve to fifteen feet high, cylindrical, jointed at small intervals; leaves sheathing, two or three feet long, acute at the end, rough, and about two inches wide; flowers on a very large, pyramidal and terminal panicle; spikelets composed of three flowers.

P. P. Pure sugar is solid, white, translucid, in masses formed of a confused collection of small crystals, or crystallized in six-sided prisms, colourless and transparent. These crystals are called *Sugar candy*. Its taste is sweet, and generally known, and its specific gravity is 1.6065. Finally, it is unalterable in the air, and phosphorescent when rubbed in the dark. The impure or *raw sugar* is in a coarse, crystalline powder, of a grey or yellowish-brown colour, of a taste slightly different from the pure sugar.

C. P. Sugar, according to Messrs. Gay-Lussac and Thénard, is composed of carbon, 42.47; oxygen, 50.63; and hydrogen, 6.90. It dissolves in its weight of cold water, and in almost any proportion of boiling water. One part of water and three of sugar form a solution called *Syrup*. Concentrated alcohol has hardly any action upon it; weak alcohol dissolves it, but not so well as water. Sulphuric acid carbonizes sugar; nitric acid decomposes and changes it into oxalic acid. The alkalies and lime render it bitter, astringent, and uncrystallizable. Heated, sugar melts, puffs up, blackens, and exhales a peculiar sweetish odour.

PREP. It is obtained by boiling, in large kettles, the expressed juice of the sugar-cane, to which is added a certain quantity of milk of lime, in order to separate the fecula and mucilage. The syrup thus obtained is concentrated by evaporation, then left to crystallize. The sugar is then permitted to drain, in order to separate the molasses, or uncrystallizable sugar, and thus is obtained the brown or raw sugar. To purify or refine it, it must be dissolved in a small quantity of water; the syrup clarified with the white of eggs, or with ox's blood, and the colouring matter separated by means of animal charcoal. It is then poured into conical moulds, where it is permitted to crystallize. Finally, it is freed from the coloured syrup which it still retains, by applying on the base of the cone of sugar, a bed of clay moistened with water, which, by filtering through the sugar, accomplishes its purification.

The numerous employments of this valuable substance are too generally known to require any further remarks. It is very seldom administered by itself as a remedy; but it is the excipient or condiment of a great number of pharmaceutical preparations.

Sugar Maple. *Acer saccharinum*, Lin., of the family *Acerineæ*. A native tree, which furnishes a large quantity of sugar. Sugar has of late been obtained with great success in France from the roots of the red beet, *Beta vulgaris*, Lin., a garden plant of the family *Chenopodeæ*.

Dog-Grass. *Radix graminis. Gramen caninum. Triticum repens*, Lin. A perennial plant, very common in uncultivated grounds.

P. U. The root.

B. C. Root repent; stems straight, about two feet high; leaves soft and green; spike elongate, compressed; spikelets distichous, unarmed, and formed of from four to five flowers.

P. P. Dog-grass root is long, cylindrical, thin, knotty, white internally, yellowish and skinny externally, inodorous, of a farinaceous and sweet taste.

C. P. It contains, according to M. Chevallier, uncrystallizable sugar, fecula, mucilage, an aromatic matter nearly similar to vanilla. According to this chemist, it contains a sufficient quantity of saccharine matter to yield, by fermentation, a certain quantity of alcohol. Water dissolves its active principles.

Th. E. Among the demulcent substances, dog-grass is one of those most frequently used in France. It is exhibited in most of the inflammatory and febrile diseases, and especially in those of the urinary passages. It was formerly recommended as a powerful diuretic, and was employed as such in dropsies.

D. & M. of Adm. Decoction, ℥ss. to ℥j. to ℔ij. of water.——*Dog-grass*, P.——*Common tisan*, Paris H. (Dog-grass, 4; liquorice, 1; water, 160.)——*Expressed juice*, P. Dose, from ℥ss. to ℥j.——*Extractum liquidum*, seu *Mellago graminis*, Den., Pol., Pr., A. (Fresh dog grass, 2; water, 1.) Dose, from ʒj. to ʒij., and above.

Barley. *Hordei semina. Hordeum vulgare.* A plant, the different varieties of which are cultivated throughout Europe and America.

P. U. The seeds.

B. C. Culm from two to five feet high, fistular; leaves alternate, sheathing, plane, lanceolate, acute and rough; flowers hermaphrodite, in a close spike at the extremity of the stem, formed by a dentate axis bearing three sessile flowers on each tooth; calix, two-valved; corolla, two-valved; the exterior valve with a long stiff awn finely dentate on the edges; three stamina; fruit ovoid, with a truncated apex, and marked with a longitudinal furrow.

P. P. Barley is ovoid, yellowish, hard, farinaceous, of a sweet and saccharine taste. Two other sorts of barley are to be met with in the shops, one known by the name of *husked barley*, is deprived of its cortical envelope, which is bitter and slightly acrid; the other, called *pearl barley*, is in white, smooth, and in more or less round grains.

C. P. According to M. Proust, barley meal is composed of starch, 32; sugar, 5; gum, 4; gluten, 3; yellow resin, 1; and *hordeine*, 55. This last principle differs from starch, which it resembles by its external appearance, by its being rough to the touch, very much like saw dust, and completely insoluble in water. Malt or barley fermented, then dried in a kiln, contains hordeine, 12; starch, 46; sugar, 15; gum, 15; and gluten, 1. Finally, the cortical envelope of this seed contains a bitter principle. Boiling water takes up its demulcent principles.

Prep. For medical use, barley is deprived of its husk by being put between two mill-stones, and formed into little, round granules, by means of a peculiar machine.

Th. E. Barley is one of the demulcent substances most commonly used. It is exhibited in the form of decoction in almost all inflammatory affections. The meal of barley is frequently mixed with that of linseed for the preparation of emollient poultices; finally, *beer*, an alcoholic drink, generally known, is prepared from malt.

D. & M. of Adm. *Pearl barley*, Decoction, from ℥j. to ℥ij. to ℔ij. of water.——*Decoctum hordei*, L., D., E., U. S. (Barley, ℥iij.; wash it first in cold water, and boil it for a short time in about half a pint of water; throw away this liquid; then pour upon the barley, boiling water, Oiv. or Ov.; boil it next, until half the quantity is evaporated.)—P. (Pearl barley, 1; althæa syrup, 2; water, 80.)——*Decoction of barley*, Paris H. (Barley, ℥j.; liquorice root, ʒj.; water, ℔iij.)——*Decoctum hordei compositum*, D., U. S. (Decoction of barley, Oiv.; figs and raisins, āā. ℥ij.; liquorice, ℥ss.;) reduce to one-half.—L. (Decoction of barley, Oij.; sliced figs, ℥ij.; liquorice root, ʒss.; stoned raisins, ℥ij.; water, Oj.; boil down to two pints, and strain.)——*Decoctum hordei acidulatum*, R. (Barley, 3; simple oxymel, 2; water, 60;) as a common drink.

Externally. Decoction, in lotions, fomentations, gargles, injections.——*Acidulated gargle*, Paris H. (Decoction of barley, ℥vj.; vinegar, ʒij.——*Barley meal*, in cataplasms.——*Resolvent poultice*, Paris H. (Barley meal, ℥viij.; soap, ℥iv.; water, q. s.)

Rice. *Orizæ semen. Seed of the Orixa sativa*, Lin. A plant, native of India, now cultivated in Italy, Spain, and America. It is very generally known, and daily used as an aliment, especially in certain countries. It differs from the other *Cerealia* by its containing no gluten, and by its being almost entirely composed of amilaceous fecula. It is frequently used as an emollient in inflammatory diseases, especially those of the intestinal canal. It was formerly recommended as an astringent, and advised, as possessing this property, in diarrhœa and dysentery; but it has been ascertained that it acts only as an emollient. It is given in decoction, *Rice water*, edulcorated with syrup.

OAT MEAL, *Grutum*, is prepared by freeing from the husks, and coarsely pulverizing the seeds of OATS, *Avena sativa*, Lin., an annual plant cultivated almost every where. Oat meal contains a large quantity of starch, sugar, a fatty oil, and a bitter principle. This substance, which is the principal part of the alimentary subsistence of the poorest class of some parts of Great Britain, is slightly nourishing, and is frequently used as an emollient in almost all the inflammatory affections, especially in those of the lungs. It is administered in decoction more or less thick, and properly edulcorated; generally known by the name of *Gruel*, or *water Gruel*.

STARCH, OR AMYLACEOUS FECULA. *Amylam*, is a peculiar principle existing in a great number of vegetables, and principally extracted from the *Cerealia*, especially from WHEAT, *Triticum æstivum*, and *T. hibernum*, Lin., annual plants, cultivated in almost every country. This substance is white, pulverulent, of a granular and crystalline appearance, rough to the fingers, insipid, inodorous, and unalterable in the air. It is found in commerce in the form of quadrangular prisms, irregular, however, pretty much alike. It is insoluble in cold water, alcohol, and ether; warm water reduces it to a sort of jelly, which is considered as a hydrate. Heated, starch melts, turns black, and is decomposed. Torrefaction renders it soluble in water, and it becomes in its nature very much like gum. Finally, in contact with iodine, it forms combinations of a more or less intense blue colour, according to the proportions in which it combines with this principle. Starch is employed as an emollient, in decoction, in the dose of from ʒij. to ʒiv. to ℔j. of water. The British pharmacopœiæ give the formula for a mucilage, *Mucilago amyli*, (starch, 3; water, 128), which is commonly used as an enema.

WHEAT and RYE FLOUR contain, besides a great quantity of starch, a good deal of gluten, and a gummous and saccharine substance. The flour of these grains possesses emollient properties, and is sometimes employed in decoction in inflammatory diseases. It is more frequently used as excipient of other remedies, and externally in the form of cataplasms. The crumb of white bread is used for preparing the *white decoction*, P. (crumb of bread, 3; calcined hartshorn and cinnamon water, ãã. 1; sugar, 4; orange-flower water, 2; water, 128); which is given in dysentery and diarrhœa. Slightly toasted, and infused in water, it forms a drink, *Panado*, moderately nourishing, of an agreeable taste, and employed principally in febrile diseases. Finally, by soaking it in boiling water or milk, it forms excellent emollient poultices, but they are subject to become sour in a short time.

BRAN. *Fur.* The husks of corn, separated from the seed, and reduced to small scales by the action of the mill-stone, still retains a sufficient quantity of starch, and is very useful for preparing lotions, injections, and emollient poultices.

SALEP. *Radix salep*, is the bulb of the *Orchis mascula*, Lin., a plant growing in woods and pastures. This substance, such as it is imported from Turkey, is in small ovoid bulbs, commonly strung together, of a yellowish-grey colour, semitransparent, hard, horney, of a slightly aromatic smell, of a mucilaginous and somewhat salt taste. These bulbs are, according to Caventou, formed entirely of a substance which presents many of the characters both of bassorine and starch; they dissolve in boiling water, and form a jelly similar to starch, which turns blue with iodine.

SAGO. *Fecula sagu*, is a fecula extracted from the pith of the *Sagus farinaria*, Rumph., a tree belonging to the family *Palmæ*, growing abundantly in some parts of the East Indies, and especially in the Molucca Islands. The best, however, comes from the northern coast of Sumatra. Sago is in small grains, irregularly round, of a reddish-grey colour, semitransparent, hard, elastic, and very difficult to pulverize, inodorous, and of a sweetish taste. It becomes soft, and swells considerably in boiling water, but it retains its form, and becomes a jelly only when it has previously been pulverized. It is the least soluble of the feculæ in boiling water.

TAPIOCA, or WHITE SAGO, *Fecula tapioka*, is obtained from the root of the *Jatropha manihot*, Lin., a shrub of the family *Euphorbiaceæ*, a native of South America. This fecula is white, in irregular grains of a variable size, hard, and of a sweet taste. It easily forms a jelly by the action of boiling water.

ARROW ROOT. A fecula furnished by the root of the *Maranta indica* and *M. arundinacea*, plants belonging to the family *Amomeæ*, native of the East Indies, and now cultivated in the West India Islands. This substance is pulverulent, and differs from starch only by its being finer and more smooth to the touch, and by giving less consistence to boiling water, which appears to arise from its containing more water in its composition.

Finally, the POTATO FECULA, *Fecula solani tuberosi*, which is abundantly furnished by the tubers of the *Solanum tuberosum*, Lin., a plant of the family *Solaneæ*, a native of South America, and cultivated almost in every country. This substance is of a shining white, and resembles starch perfectly, except that it is in coarser powder. The fecula of potato, as well as all the others we have described above, is endowed with emollient properties, and is frequently employed as a light aliment of an easy digestion, in convalescence, and in all instances in which it is necessary to nourish the patient without fatiguing the digestive organs.

PRUNES. *Pruni domesticæ fructus*, fruit, dried in an oven or in the sun, of the *Prunus domestica*, Lin., a tree of the family *Rosaceæ*, containing an acidulous and saccharine pulp, which possesses emollient and temperant properties. They are frequently administered in decoction, edulcorated with sugar and this prepared pulp enters into the composition of several officinal preparations. The preserves made with the damask plum, are more acid, and act as a laxative. Their decoction is employed as a purgative for children, and as an excipient for other purgative medicines.

RAISINS. *Uvæ passæ*, fruit, dried in the sun, of the *Vitis vinifera*, Lin. (see page 272), of which three different kinds are found in commerce, viz., case raisins, those of Corinth, and those of Damascus; FIGS, *Caricæ pingues*, fruit of the *Ficus carica*, Lin., of the family *Urticeæ;* DATES, *Fructus dactyli*, preserved fruit of the *Phœnix dactylifera*, Lin., of the family *Palmæ;* and the JUJUBS, *Fructus jujuba*, dried fruit of the *Rhamnus ziziphus*, of the family *Rhamneæ*, are commonly designated collectively by the name of *pectoral fruits*. All these substances, which contain a good deal of mucilage and saccharine matter, called *grape sugar*, united with a small quantity of acid, possess some emollient and slightly nutritive properties. They are generally used in decoction in inflammatory affections of the organs of respiration. Figs, boiled in milk, are very advantageous in gargles and cataplasms, in anginæ and inflammations of the mouth.

The seeds of the BOTTLE GOURD, *Cucurbita lagenaria*, Lin., of the POMPION, *Cucurbita pepo*, Lin., of the MELON, *Cucumis melo*, Lin., of the CUCUMBER, *Cucumis sativus*, Lin., plants belonging to the family *Cucurbitaceæ*, formerly known by the name of *Semina frigida majora*, contain a fixed oil and a good deal of mucilage. They act as an emollient, and may be used, after having been freed from their envelope, for emulsions. They were formerly in great repute, but are now almost discarded on account of the facility with which they become rancid. The same may be said of the seed of HEMP, *Cannabis sativa*, Lin., of the family *Urticeæ*, which was very frequently employed in emulsion or infusion, in inflammatory diseases of the urinary passages.

Finally, several other plants containing a great quantity of mucilage, are also employed as emollient, such are the QUINCE SEEDS, *Pyrus cydonia*, Lin., of the family *Rosaceæ;* the PSYLLIUM SEEDS, *Plantago psyllium*, Lin., of the family *Plantagineæ;* the GROUNDSEL, *Senecio vulgaris*, Lin., of the family *Synanthereæ;* the BRANK URSINE, *Acanthus mollis*, Lin., of the family *Acantheæ;* the BULB of the WHITE LILLY, *Lilium candidum*, Lin.; the LEEK, *Allium porrum*, Lin., of the family *Liliaceæ*, &c.

DEMULCENT ANIMAL SUBSTANCES.

MILK. *Lac.* A peculiar liquid, secreted, in mammiferous animals, by particular glands, called the *mammary glands*, and intended for the purpose of nourishing the young.

P. P. Milk, generally considered, is white, opaque, heavier than water, of a sweet, peculiar, and variable taste, according to the species of the animal from which it is obtained.

C. P. It is composed of water, curd, sugar of milk, a fatty matter, different salts, and a small quantity of acid; the whole is, indeed, in very variable proportions. When allowed to stand for some time, it separates by degrees into three parts: the first, which forms the superior part, is called *cream*, and is white, opaque, soft, and unctuous; it is composed of butter, united with a certain quantity of curd and serum; the second, equally white and opaque, but without unctuosity, is formed of the curd; finally, the third, which is liquid, transparent, of a slight green colour, of a sweetish and sub-acid taste, constitutes the *serum* or *whey*. It is itself composed of water, sugar of milk, and a small quantity of curd. Milk may be mixed in all proportions with water. Tolerably strong acids and alcohol coagulate it; the alkalies, on the contrary, redissolve the curd.

Cow's milk is the most commonly used; that of the goat and of the ass is also very frequently employed. These liquids are at the same time nourishing and emollient. They are administered as such in the treatment of diseases of the lungs and in certain cutaneous affections. The milk diet is often advantageous in phthisis pulmonalis, and in organic alterations of the stomach and other organs. Milk is also employed as an emollient topical application in phlegmasiæ of the skin, hæmorrhoids, angina, &c.

WHEY. *Serum lactis,* which is prepared by pouring into milk a certain quantity of vinegar and boiling it, is frequently used as a demulcent and refrigerant in inflammatory diseases in general, especially in those of the digestive organs. It serves also as a vehicle for administering more active remedies.

ISINGLASS. *Ichthyocolla,* is a substance prepared, principally in Russia, from the internal membrane of the *Vesicula natatoria* of the LARGE STURGEON, *Acipenser huso,* a very large fish of the order *Chondropterigienses,* and from some other fishes: it is found in commerce in three different states: rolled up and forming twists of a small size, contorted in the shape of a lyre; in larger twists, heart-shaped; or, finally, in thin and square sheets. It is white, semitransparent, inodorous, and insipid. Infused in cold water, it swells up, becomes soft and *opalized.* It dissolves in boiling water, leaving hardly any residue; and on cooling, it forms a thick and shaking jelly, having a slight opal colour. Isinglass is almost entirely composed of gelatine. It is frequently employed in the formation of light nutritive jellies, of an easy digestion, very useful in the convalescence of protracted diseases, &c. It is commonly used for clarifying turbid liquors.

GLUE. *Taurocolla.* Gelatine, extracted from the feet, ears, &c., of oxen, calves, and horses, is found in the shops in the form of dry, square pieces, brittle, semitransparent, of a variable colour, from light yellow to reddish-brown. It is employed for preparing gelatinous baths, the use of which is frequent and often beneficial as an emollient.

The meat of young animals in general, especially of the calf, lamb, chicken, and that of some animals of an inferior class, such as bull-frogs, the vine-snail, turtle, viper, cray-fish, &c., contains a large quantity of gelatine, which imparts to them emollient properties. By boiling, for several hours, in water, a certain quantity of these animal substances, we obtain emollient and slightly nutritive drinks, known by the name of *medicinal broths*, (see page 37), which are frequently administered in France with advantage in most inflammatory affections. The most commonly used in this country are those of veal and chicken.

LARD. *Axungia* seu *Adeps suilli*, is the melted and purified fat of pork. *Sus scrofa*, Lin., a mammiferous animal of the tribe *Pachydermes*. It is very white, solid, below 27° Centig. (72° Fahr.), granulated, smooth, and melting under the fingers; of a faint smell, of a sweet and agreeable taste, but becoming rancid in a short time. Its composition does not differ from fatty animal matters in general (see page 394). This substance acts on the economy like the sweet fixed oils, and is much employed as excipient of almost all the salves, and constitutes one of the principles of ointments and plasters.

BUTTER. *Butyrum* is contained in the cream of milk, and is used as emollient to dress blisters, or inflamed wounds, and enters as excipient into sundry salves.

SUET. *Sebum ovilli*, is the fat of the sheep, *Ovis aries*, a mammiferous animal of the class *Ruminantes*; it is white, solid, of a peculiar taste and smell. It is used only in the preparation of certain ointments and plasters.

WAX. *Cera*, a peculiar matter, secreted by the bee, and with which this insect forms the honeycombs. It is found in commerce in circular pieces of variable sizes, of a yellow colour, of a slightly aromatic taste, and of the specific gravity of about 0.96. But as this wax is not pure, and its colour and smell are owing to the presence of extraneous bodies, it is purified and freed of its colouring matter by different processes; it is then called *white wax*. In this state it is white, solid, brittle, almost insipid and inodorous; it becomes soft when heated, and melts at 70° Centig. (158° Fahr.) It is decomposed by a higher degree of heat. It is insoluble in water; disolves in all proportions in the fixed oils, and in essential oils by the assistance of heat, &c. This substance, which was formerly administered internally as an emollient suspended in an emulsion, enters into the composition of almost every ointment and plaster; and we apply the name of *cerate* to the mixture of oil and wax so frequently used in surgery.

Finllay, SPERMACETI. *Sperma ceti* is a peculiar fatty matter, existing abundantly in solution in the oil surrounding the brain of the spermaceti whale, *Physeter* seu *Catadon macrocephalus*. This substance, when pure, is in translucid and white masses, shining, pearly, unctuous, and slightly flexible, of a crystalline structure, inodorous, insipid; specific gravity, 0.943. It melts easily at 44° Centig. 107° Fahr. At a higher temperature a portion volatilizes, and the other is decomposed. Insoluble in water, it dissolves in fixed and volatile oils, in alcohol and ether. The properties of spermaceti are very nearly the same as those of white wax. It is occasionally employed internally, suspended in a julep by means of the yolk of eggs, as a demulcent, to alleviate cough; and it enters into the composition of several plasters and ointments; it is the base of the *Ceratum cetacei*, L. (Spermaceti, ℥ss.; white wax, ℥ij.; olive oil, f.℥iv.)

CHAPTER XIV.

ANTHELMINTIC OR VERMIFUGE REMEDIES.

ANTHELMINTIC (αντι, against, and ελμινς, worm), or *Vermifuge remedies*, are those which have the property of killing worms, or of causing them to be evacuated from the stomach and intestines. These effects are frequently produced by drastic purgatives, and several other substances, acting very powerfully upon the animal economy, such as camphor, oil of turpentine, several energetic tonics or astringents, &c.; but some of these substances, without exercising a determinate action on the general economy, seem, however, to be deleterious to the worms existing in the digestive canal. Having already spoken of the former, we shall now confine ourselves to the latter. The number of anthelmintics, properly so called, is very limited; they are furnished both by the vegetable and mineral kingdoms. In most cases they are administered internally, and their exhibition is generally followed by a purgative medicine, in order to facilitate the expulsion of the worms.

Family Algæ.

CORSICAN WORMWEED. *Helminthochorton, Fucus helminthochortos,* Lin. A marine plant, growing on the coast of the Mediterranean, and especially of the Island of Corsica.

P. U. The whole plant.

B. C. Stems slender and cylindrical, terminated by small crooked branches, upon the lateral parts of which are sessile tuberculæ, containing the organs of fructification.

P. P. This plant is of a cartilaginous consistence; of a dull, reddish-brown colour; has a bitter, salt, and nauseous taste, and its odour is rather pleasant. It is found in the form of thick tufts, composed of numerous filaments, united at the base, in bundles intermingled together, and fastened to each other by small hooks with which the stems are furnished. It is always found in commerce mixed with different species of filamentous sea-weeds, &c.

C. P. According to M. Bouvier's analysis it is composed of gelatine, 602; vegetable fibre, 110; sulphate of lime, 112; muriate of soda, 92; carbonate of lime, 75; iron, manganese, and silica, united with phosphate of soda, 17. It also contains iodine, as is the case with almost all the sea-weeds. Water dissolves its active principles.

Th. E. The influence exercised by this substance upon the economy is hardly appreciable; however, it may produce a slight irritation of the digestive canal, but it acts very powerfully on the intestinal worms. It is principally exhibited to children, for the expulsion of lumbricoid worms. Its employment is attended with most beneficial effects in this troublesome disease of children.

D. & M. of Adm. Powder, gr.x. ao ʒij., mixed with honey, &c. Infusion, ʒj to ℥j., in a cupful of water or milk.——*Jelly of Corsican moss*, P. (Helminthochorton, 16; isinglass, 1; white wine, 64; sugar, 96; water, 256.) Dose, ʒ. and above.——*Corsican wormweed mixture*, Paris, H. Corsican wormweed, ʒj; simple syrup, ℥j.; boiling water, ℥iv.) Dose, a table-spoonful at once.

Family Filices.

Male Fern. *Filicis maris radix. Polypodium filix mas*, Lin. *Nephrodium filix mas*, Rich. *Aspidium filix mas*, Smith. *Polystichum filix mas*, Lamarck, et De Candolle. A perennial herbaceous plant, growing abundantly in shady places.

P. U. The root and unexpanded buds.

B. C. Root or stump subterraneous, horizontal; leaves large, petiolate, oval, pinnate, pinnulæ close to each other, very long and pinnatified; petioles short, of a deep brown colour, and furnished with scales; fructifications reniform and rounded.

P. P. The root of this plant is of the size of the thumb, knotty, brown, and scaly internally, whitish externally, from six to eight inches long, of a disagreeable smell, and of a bitter and harsh taste.

C. P. According to M. Morin's analysis this root contains a volatile oil, a fatty matter, uncrystallizable sugar, gallic acid, tannin, starch, &c. M. Peschier, an apothecary at Geneva, by digesting some buds of male fern in sulphuric ether, obtained an ethereal tincture of an oily consistence, containing a peculiar matter resembling adipocire, which appears to be the anthelmintic principle of this plant.

Th. E. The male fern root has but a very indifferent action on the animal economy, but it appears to be deleterious to intestinal worms. Indeed, it is employed with success for destroying *lumbrici, trichocephales*, and *teniæ*. Dr. Peschier, brother to the above-mentioned pharmaceutist, asserts, that h has exhibited, with constant success the ethereal tincture of the fern buds in the treatment of tenia. He mentions 150 instances of cures during the course of nine months, and he is confident that, when properly administered, this substance does not fatigue the stomach of the patient.

D. & M. OF ADM. Powder, ʒij. to ʒiij.; two hours after its administration, a purgative is given in order to procure the expulsion of the worms.——*Ethereal tincture of fern buds.* PESCHIER. Dose, from gutt.xlij. to xxx., mixed with an extractive substance, q. s. to form as many pills as there are drops of this tincture.

Family Synanthereæ.

SEMEN-CONTRA. European worm-seed. *Semen-contra vermes. Artemisia judaica,* Lin. A shrub growing in Arabia and in the north of Africa.

P. U. The seeds, top of the flower-stalks, and superior ramifications.

B. C. Stem ramose, pubescent, of an an ash-grey colour, from one to two feet high; leaves small, tomentose; flowers yellowish, small, and in dense panicles; receptacle, naked and thin; fruit without pappus.

P. P. We distinguish two sorts of semen-contra in commerce; the one from the *Levant,* the other from *Barbary;* that from the *Levant* is greenish, composed of oblong capitulæ, entire or broken, formed of imbricated scales, covering ovoid and flattened seeds of a yellow colour, and mixed with broken peduncles. Its smell is strong and aromatic, and its taste very bitter. That from *Barbary* is composed of whitish buds, not developed, and of fragments of leaves and peduncles; its taste is acrid, and its odour strong and unpleasant.

C. P. This substance, as well as all the plants of this genus, contains a gummo-resinous bitter principle, and an essential oil.

TH. E. It is considered as a very energetic vermifuge, and is principally employed to expel from the digestive canal *Lumbrici* and *Ascarides vermiculares.*

D & M. OF ADM. Powder, gr.xx. to ʒij., mixed with honey, &c. Infusion, from ʒij. to ʒiij., in water, wine, or milk.——*Vermifuge powder,* P. (Semen-contra, helminthochorton, wormwood, tansy, scordium, senna and rhubarb, āā. e. p.) Dose, from ʒss. to ʒj.——*Vermifuge bolus,* PARIS, H. (Semen-contra, gr.viij.; calomel, gr.ij.; camphor, gr.vj.; syrup, q. s. for one bolus.) Dose, from No. j. to ij., and more if necessary, a day.

Family Gentianeæ.

PINK ROOT. INDIAN OR CAROLINA PINK ROOT. *Spigelia marylandica,* Lin. A perennial herbaceous plant, growing in the southern states of North America. P. U. The roots and leaves, but the former especially.

B. C. Stems numerous, from one to two feet high, four-sided, smooth, and of a purplish colour; leaves few, sessile, opposite, ovate and acuminate; flowers on a unilateral spike, leaning towards one side, and composed of from four to twelve flowers; calix five-parted; corolla funnel-shape, contracted at top, with five acute segments of a beautiful carmine colour externally, except towards the base, where it is blended with white, of an orange colour inside; anthers convergent; capsule didymous, two-celled, four-valved, containing many seeds.

P. P. Roots consisting of a great number of slender and blackish fibres, forming together a large bunch. They are sent in bundles of twenty to twenty-five inches long, together with the stems furnished with their leaves. Their taste is bland, and somewhat nauseous.

C. P. The root contains a large quantity of mucilage, but it does not appear to contain resin.

Th. E. The properties of this root are satisfactorily ascertained, by the daily exhibition made of it as an anthelmintic, especially for the expulsion of lumbrici. It is the most popular medicine for this object. It is stated to be much more active in its recent state than when old. It is a powerful medicine, producing, in large doses, all the effects of narcotic substances. Besides its vermifuge property, the pink root has proved occasionally very efficacious in intermittent fevers.

D. & M. of Adm. In powder, from 10 to 15 grains, and even more. Decoction. from ℥ss. to ℥j. in a pint of water, given by wine glassfuls every 2 or 3 hours; but it is generally combined with senna leaves in order to procure the expulsion of worms as soon as they have been destroyed or weakened by the vermifuge. Some physicians give the spigelia by itself, and purge immediately after with calomel or any other cathartic; in this way it prevents the nervous symptoms, and seldom fails to bring away worms when they are present.

Family Chenopodeæ.

Wormseed. Jerusalem Oak. *Chenopodium anthelminticum*, Lin. An herbaceous plant, growing all over America, from Canada to Brazil, in old fields, gravel, rubbish, &c.

P. U. The seed and leaves.

B. C. Stem branched, upright, from two to five feet high; leaves sessile, alternate, attenuated at both ends, margin sinuate by large, unequal, obtuse teeth; flowers very small, numerous, and yellowish-green; calix, or simple perigone, with five short, oval segments; style bifid or trifid, longer than the stamina; seeds lenticular, flat, shining, crowned by the persistent calix.

P. P. The whole plant possesses a strong and lasting smell, a bitter, acrid, and aromatic taste.

C. P. The seed contains a large quantity of essential volatile oil, very penetrating and pungent, in which resides the medicinal properties.

Th. E. It is a very active and certain vermifuge, extensively used throughout America. The expressed juice is given in the dose of a table-spoonful for a child two or three years old, and is repeated two or three times a day. The infusion of a handful of the leaves and seeds, to a quart of milk, is administered by a wine-glassful at once, three times a day. Pulverized seeds, a tea-spoonful, in syrup or molasses, morning and night.

The essential oil is the most usual form in which this medicine is now administered; it is given in the dose of from two to eight drops to children under two years old; from eight to twelve to others under six years; and as much as twenty or thirty to adults. One great advantage which this medicine has over most of its kindred articles is, that it is an excellent tonic, well suited to the case of weak stomach and impaired digestion, which so often attends worms or the simulated affections.

Family Meliaceæ.

Pride of China. *Melia azedarach*, Lin. A tree, native of India.

P. U. The bark of the root and berries.

B. C. A tree of moderate size, with bi-pinnate and alternate leaves, and forming bunches towards the summit of the branches: leaflets smooth, ovate, and dentate; flowers odorous, somewhat similar to jessamine; calix small, five-parted; petals five; nectary cylindrical, ten-toothed; orifice internally antheriferous; style cylindric; stigma five-rayed; fruit, a globose drupe; nut five-celled, five-seeded.

Th. E. The fresh bark of the root of this tree is a very active vermifuge medicine, and as such has become the most popular article among the inhabitants of the southern states of America, where the tree has become naturalized. It is considered by many practitioners as decidedly superior to all other medicines in lumbricoides or other species of worms. It is said to produce, in the months of March and April, while the sap is mounting into the tree, stupor, dilatation of the pupil, stertorous breathing, &c.; but these symptoms, like those sometimes produced by the spigelia, pass off without perceptible injury to the economy. It has proved a useful febrifuge in those affections usually denominated verminous fevers. The berries are also exhibited with effect, and children are suffered to eat them without any particular regard; and it is stated by some that they are quite as efficacious as the bark of the root.

The pulp of the fruit, made into an ointment with lard, has been employed with success in tænia capitis.

D. & M. of Adm. Decoction, a large handful of the fresh bark boiled in a quart of water until reduced to about a pint, of which from half an ounce to one ounce may be given every two or three hours until it operates; exhibited in this manner its operation is powerful, sometimes producing both vomiting and purging.

Family Leguminosæ.

Cowhage. *Dolichos pruriens*, Lin. *Stizolobium pruriens*, Persoon. A sarmentose plant, growing in the East and West Indies and in South America.

P. U. The spiculæ or hair of the pods.

B. C. Stem sarmentose, climbing; leaves ternate, on long footstalks; flowers racemose and axillary, of a yellowish colour, spotted with purple; pods about four inches long, thickly covered with short and stiff brown hairs, which, when applied to the skin, occasion an intolerable itching.

Th. E. The operation of this article seems to be merely mechanical. It has been found particularly useful in expelling the round worm, *Lumbricus teres;* the spiculæ irritating and aiding its expulsion, by wounding it, without affecting the intestines. It is prepared by dipping the pods in syrup or molasses, and then, with a knife, scraping off the hairs along with the syrup, until it forms a mixture of the thickness of honey, which is given in doses of a tea-spoonful to a table-spoonful in the morning, and followed by a brisk cathartic. It is advised, before exhibiting it, to prepare the patient by a gentle purgative, as its efficacy is generally much increased by this practice, probably by exposing the worms more to its action.

Cabbage-tree Bark. *Geoffroya inermis*, Lin. A tree, native of Jamaica, growing in low savannahs.

P. U. The bark.

B. C. Trunk elevated, branching at top; leaves pinnate, composed of four or five pairs of lanceolate, pointed, and smooth folioles, in pairs, with a terminal one: flowers in clusters, of a pale-rose colour; germ oval, with a curved, tapering style, and hooked stigma; fruit resembling a small plum, pulpy, marked on each side with a longitudinal furrow, and containing a hard seed.

P. P. Bark grey externally, black internally, furrowed, and pulverulent, affording a powder resembling that of jalap. Its taste is unpleasant, sweetish, and mucilaginous.

C. P. Its soluble component parts seem to be chiefly mucus, resin, extractive, saccharine matter, and a narcotic principle.

Th. E. This bark is a powerful anthelmintic, particularly useful in expelling lumbrici. It may be given in the form of powder, decoction, extract, or syrup. It operates as a cathartic, but sometimes also as a narcotic, and it requires, therefore, to be given at first in small doses, which may be gradually increased till nausea is excited. In large doses it is apt to occasion sickness, vomiting, fever, and delirium; and the same effects are produced if cold water be drunk during its operation. When such symptoms occur from either cause, they are generally removed by copious draughts of warm water, a dose of castor oil, followed with a plentiful dilution of lemonade, or an infusion of tamarinds.

D. & M. of Adm. Powder, from ℈j. to ʒss.——*Extract*, gr.ij. to gr.iv.——*Decoctum Geoffrææ enermis*, E. (Cabbage-tree bark, ℥j.; water, ℔ij.; boil with a gentle heat down to ℔j.) Doses, for children, f.ʒij. to ℥ij.——*Syrup*. (Decoction, 1 part; sugar, 2 parts.) Dose, from one to four table-spoonfuls.

Samphire, or Sea Fennel. *Crithmum maratimum*, Lin. An annual plant, of the family *Umbelliferæ*, growing on the rocks along the sea shore. It possesses a strong smell, and an aromatic, sharp, and salt taste. According to M. Lavini, this plant contains a volatile oil, very light and fluid, of a straw colour, of a very acrid taste, and of a smell approaching that of petroleum, some salts, with base of lime and potassa, free acetic acid, &c. He attributes to this plant, which was formerly employed as a powerful diuretic, the property of expelling the lumbrici from the stomach and intestines, by vomiting and purging the patient. In this view he recommends the expressed juice of the leaves, or the essential oil mixed with sugar, in the form of oleo-saccharate; he thinks it may also act efficaciously, by applying to the epigastrium a cataplasm of the bruised leaves.

Garlic. *Allium sativum*, Lin. A plant of the family *Liliaceæ*, native of Italy, and cultivated almost every where, of the size of a large walnut, composed of several small bulbs, covered with a thin, dry, and whitish coat. Its strong and disagreeable odour, as well as its taste, are generally known. It contains a very acrid, heavy, and yellow volatile oil, albumen, sulphur, a saccharine matter, and fecula. The above acrid oil imparts to garlic a very energetic property, which irritates to such a degree, that when bruised and applied to the skin, it acts as a rubefacient, and may occasion ulcerations difficult to cure. Administered internally, either raw, or boiled in water or milk, garlic acts as an anthelmintic, and is frequently resorted to, principally as a domestic remedy.

It has been successfully given in intermittents, and in typhoid fevers. If the body be kept warm during its use, it acts powerfully by producing a plentiful diaphoresis. A poultice made of it is a good resolvent in indolent tumours; a clove of it, wrapped in cotton or gauze, or a few drops of the juice introduced into the external ear, is said to be extremely efficacious in atonic deafness; and applied to the pubes as a poultice, in retention of urine, owing to a want of action in the bladder, it is sometimes effectual in stimulating that viscus to discharge its contents. The juice is also applied, combined with oil, to herpetic eruptions.

D. & M. OF ADM. In substance, from ʒss. to ʒij., or from 1 to 6 cloves, swallowed whole, twice or thrice a day; in pills, united with soap, or calomel, from gr.xv. to ℈j. Juice, f.ʒss. in any proper vehicle.——*Syrupus allii*, D., U. S. (Garlic bulb, sliced, ℔j.; boiling water, Oij.; sugar, q. s.)——*Vinegar of garlic.* (Recent bulb of garlic, ℥vj.; distilled vinegar, Oiij.; proof spirit, f.℥iv.)——*Syrup of garlic.* (Vinegar of garlic, Oij.; refined sugar, ℔iijss.)

MINERAL VERMIFUGE SUBSTANCES.

TIN. *Stannum.* A metal found in nature in the state of oxide or of sulphuret, in England, France, Germany, &c.

P. P. The metallic tin is solid, malleable, of a white colour; when it is bent, we hear a peculiar noise called the crackling of tin; it acquires a slight and disagreeable odour by friction, and its specific gravity is 7.299.

C. P. This metal melts at 228° Centig. (442° Fahr.); powerfully heated, it blazes, burns, and is converted into an oxide; with a gentle heat, and in contact with the air, it acquires a pellicle exhibiting the colours of the rainbow, formed of oxide of tin and metallic tin. Concentrated nitric acid acts very powerfully upon this metal, and converts it into the state of oxide; hydro-chloric acid dissolves it easily, especially with the assistance of heat. It forms two combinations with sulphur, one of which is the *Aurum mussivum.*

TH. E. The powder of this metal has been recommended in the treatment of several diseases, but it seems to be really useful only as an anthelmintic.

D. & M. OF ADM. Powder or filings, ℥ss. to ℥j., incorporated with honey or syrup.——*Pulvis stanni*, R. (Pure tin, 2; prepared chalk, 1.) Dose, from gr.xx. to xl.——*Anthelmintic electuary*, PARIS H. (Tin, ℥j.; extracts of mugwort and jalap, āā. ʒj.; compound syrup of succory, q. s., for twelve doses.) Dose, No. j., every half hour.

NAPHTHA is a substance, the origin of which is not perfectly known. It is the most fluid of several varieties of bitumen, and is supposed to be the product of the putrid fermentation of mineral coal. It is found abundantly, at a certain depth, on the shores of the Caspian Sea, in Calabria, &c.

It is a transparent liquid, white or slightly yellowish, of the specific gravity of 0.83, of a peculiar and disagreeable odour. It is very volatile, and burns when it comes in contact with an ignited body. It is insoluble in water, but it dissolves in alcohol, ether, and oils.

It is occasionally employed as an anthelmintic, in the dose of from ten drops to ʒj., and even more, mixed with ether, in order to cover its disagreeable smell.

Petroleum, a mixture of naphtha and bitumen, is found in many countries. It is liquid unctuous, of a blackish-brown colour, almost opaque, of a strong and disagreeable smell, and of the specific gravity of 0.85. It has been used for the same purpose as the preceding article, but is almost discarded.

TABLE

OF THE

PRINCIPAL MEDICINAL PLANTS,

ARRANGED IN

THE ORDER OF THEIR NATURAL FAMILIES.

I. ACOTYLEDONOUS PLANTS.

Class First.

ACOTYLEDONIA.

Plants whose germination of the seeds is not well known, and which are supposed not to have any cotyledons.

ALGÆ.

Vegetation of a very simple organization, of an homogeneous structure, of very variable forms and consistence, growing most commonly in fresh or salt water; fructifications consisting of *conceptacles* or *sporanges* resembling tubercle, dehiscent or not dehiscent, and placed on the outside of the plant or in the substance itself.

Corsican Moss. *Fucus helminthochortos,* Lin.

FUNGI.

Terrestrial or parasitical plants of very variable consistence, but never of a green colour; sometimes in the form of tubercles, or in that of minute filaments; at others, and even more frequently, in the shape of umbrells, &c. The organs of reproduction are in the form of dust, and placed internally or externally.

White Agaric. *Boletus laricis,* Lin.

LICHENEÆ.

Dry and coriaceous plants, generally membraniform or dendroid, growing commonly upon trees or rocks; fructifications enclosed in receptacles resembling scutcheons or tubercles.

Iceland moss. *Lichen islandicus,* Lin. *Physcia islandica,* De Cand.

Liver-wort. *Lichen pulmonarius,* Lin. *Lobaria pulmonaria.* De Cand.

Cup moss. *Lichen pyxidatus,* Lin.

FILICES.

Plants commonly herbaceous, with subterranean and perennial stems; leaves alternate, rolled up like a crosier before their expansion, simple, pinnatifid or decomposed. Organs of fructification, consisting in sporules[*] contained in scaly capsules, situated under the leaves, or forming clusters or terminal spikes.

Male fern. *Nephrodium filix mas*, Rich. *Polypodium filis mas*, Lin.
Polytricon. *Asplenium trichomanes*, Lin.
Black maidenhair. *Adianthum nigrum*, Lin.
Montpellier maidenhair. *Adianthum capillus veneris*, Lin.
Canada maidenhair. *Adianthum pedatum*, Lin.
Ceterach. *Ceterach officinarum*, Lin.

II. MONOCOTYLEDONOUS PLANTS.

(Plants whose embryo possesses one cotyledon or lobe.)

Class Second.

MONOHYPOGYNIA.

(Stamina fixed to the receptacle.)

PIPERITEÆ.

Stem herbaceous or woody, climbing, leaves simple, alternate, or opposite; flowers in axillary aments, without calix or corolla; generally two stamina, sometimes one, at others more than two; anthers one or two-celled; ovary simple; one or more stigmas; fruit a monospermous and undehiscent shell.

Black pepper. *Piper nigrum*, Lin.
Bettel. *Piper betel*, Lin.
Cubebs. *Piper Cubeba*, Lin.
Long pepper. *Piper longum*, Lin.

AROIDEÆ.

Roots often tuberous; without stem; leaves vaginant; flowers hermaphrodite or unisexual; disposed on a *spadix* enveloped in a spathe; with or without a four-divided calix; stamina variable; ovary one or three celled; stigma glandular; fruit monospermous or polyspermous berries.

Indian Turnip. *Arum triphyllum*, Lin.
Spotted Arum. *Arum maculatum*, Lin.
Swamp cabbage. *Symplocarpus fœtida*, Salisbury.
Calamus aromaticus. *Acorus calamus*, Lin.

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[*] *Sporules*, *spores* or *seminules*, are names given to the seeds or the seminal powder of several acotyledonous plants; in the *filices* this powder is extremely fine, and of various colours.

CYPEROIDEÆ.

Stems or culms triangular, without nodes; leaves long, narrow, vaginant; flowers hermaphrodite or unisexual, frequently monoicous, in spikes or aments; a single shell instead of a calix; three stamina; ovary unilocular; five stigmas; fruit, *Achene*, of variable form.

Long galangale. *Cyperus longus*, Lin.
Round galangale. *Cyperus rotundus*, Lin.
German sarsaparilla. *Carex arenaria*, Lin.

GRAMINEÆ.

Stem herbaceous, known by the name of *culm* or straw; cylindrical, fistular, with nodes; leaves long, narrow, alternate, vaginant; flowers in spikes or panicles; the hermaphrodite, sometimes unisexual, enveloped in scales, the external one of which, divided in two cells, is called *Lepicene*, or external glume, and contains one or several flowers forming the spikelet; the internal scale is called *bale* or *internal glume*, and is often bivalved; one of the valves is commonly terminated by a filiform apex called *awn*; stamina generally three, sometimes more, at others less; stigma double, plumose; ovary simple, one style; fruit, a *cariopse* or achene, with a farinaceous endosperm.

Oats. *Avena sativa*, Lin.
Dog-grass. *Triticum repens*, Lin.
Wheat. *Triticum sativum*, Lin.
Rye. *Secale cereale*, Lin.
Barley. *Hordeum vulgare*, Lin.
Provence reed. *Arundo donax*, Lin.
Broom reed. *Arundo phragmites*, Lin.
Sugar cane. *Sacccharum officinarum*, Lin.
Rice. *Oriza sativa*, Lin.

Class Third.

MONOPERIGYNIA.

(Stamina fixed to the calix.)

PALMÆ.

Stem or stipe rising in a slender column, straight, cylindrical; leaves very large, forming a bunch at the top of the stem; flowers hermaphrodite or dioicous, very numerous, supported on common peduncles, and enclosed, before the expansion of the flowers in monophyllous or polyphyllous spathes; calix double and persistent, six-divided; six stamina; three ovaries, two of which are generally abortive; from one to three styles; one simple or trifid stigma; fruit very variable, according to the species.

Date tree. *Phœnix dactylifera*, Lin.
Sago tree. *Sagus farinaria*, Rumph.

ASPARAGINEÆ.

Stem commonly sarmentose and climbing, sometimes cylindrical, and crowned with a bunch of leaves similar to that of the *Palmæ;* leaves simple, petiolate, or sessile; opposite or alternate, and seldom verticillate; flowers hermaphrodite; calix petaloid, coloured, with from four to six *sepals*[*] or divisions; four to six stamina; ovary not adherent, three-celled; style simple or trifid; stigma three-lobed; fruit, a globular berry, containing one or several seeds.

Asparagus.	*Asparagus officinalis,* Lin.
Sarsaparilla.	*Smilax sarsaparilla,* Lin.
China root.	*Smilax china,* Lin.
Butcher's broom.	*Ruscus aculeatus,* Lin.

COLCHICEÆ.

Root often bulbiferous; stems herbaceous; leaves alternate, long, sheathing; flowers, perianth petaloid, six-divided, sometimes tubulated towards its base; six stamina, opposite to the divisions of the perianth; ovary simple, three-sided; style trifid; three stigmas; fruit, a trilocular and three-valved capsule, containing numerous seeds.

Meadow saffron.	*Colchicum autumnale,* Lin.
Cevadilla.	*Veratrum sabadilla,* Retz.
White hellebore.	*Veratrum album,* Lin.

LILIACEÆ.

Root often bulbiferous; stem herbaceous; leaves alternate, sometimes verticillate, elongate, vaginant; flowers sometimes contained in a spathe, solitary or paniculate, at others disposed in corymbs; calix coloured, with six sepals or divisions, soldered at their base; ovary three-celled; style simple, sometimes wanting; stigma three-lobed; fruit a trilocular and three-valved capsule, containing numerous seeds.

White lilly.	*Lilium candidum,* Lin.
Garlic.	*Allium sativum,* Lin.
Leek.	*Allium porrum,* Lin.
Onion.	*Allium cepa,* Lin.
Squill.	*Scilla maritima,* Lin.
Spike aloes.	*Aloe spicata,* Lin.
Perfoliate aloes.	*Aloes perfoliata,* Lamarck.
Mealy star-grass.	*Aletris farinosa,* Michaux.

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[*] Sepal or foliole constituting the calix, which is monosepalous or polysepalous, according as it is formed of a single foliole or of several, cut into various forms. The words monosepalous and polysepalous are synonymous with monophyllous or polyphyllous, but are applied only to the calix.

IRIDEÆ.

Root bulbiferous or repent; scape naked or foliate; leaves sessile, vaginant, alternate, and compressed; flowers contained in a spathe; calix petaloid, tubular towards its base, with six irregular divisions; three free stamina, either distinct, or soldered by their filaments; style simple or trifid; stigma plane and petal-like; fruit, a three-celled and polyspermous capsule.

Yellow water flag. *Iris pseudo-acorus*, Lin.
Blue flag. *Iris versicolor*, Lin.
Florentine orris. *Iris florentina*, Lin.
German orris. *Iris germanica*, Lin.
Saffron. *Crocus sativus*, Lin.

Class Fourth.

MONOEPIGYNIA.

(Stamina soldered with the pistil.)

AMOMÆ.

Stems commonly herbaceous; root perennial and tuberculated; leaves simple, entire, vaginant, rolled up before their development; flowers solitary, in spikes or clusters, contained in spathes; calix coloured, tubular towards its base, with a double limb, the external one three-divided, as well as the internal one, the two superior divisions forming the superior lip, and the third, irregular and tri-lobed, constitutes the inferior one; one stamen, with a plane and petaloid filament; ovary three-celled; stigma concave; fruit a three-celled and three-valved capsule, sometimes a berry containing several seeds.

Cardamom. *Amomum cardamomum*, Lin.
Long zedoary. *Amomum zedoaria*, Willd.
Ginger. *Amomum zingiber*, Lin.
Round zedoary. *Kæmpferia rotunda*, Lin.
Galangal. *Kæmpferia galanga*, Lin.
Arrow root. *Maranta arundinacea*, Lin.

ORCHIDEÆ.

Root with two fleshy tubers, rounded or palmate; stem simple, herbaceous, sometimes climbing; radical leaves vaginant; cauline leaves sessile, alternate; flowers in a spike, seldom solitary; calix petaloid, with six divisions; the three external ones regular, the three internal of various forms; one stamen; ovary inferior; fruit a three-valved, unilocular, and polyspermous capsule.

Salep or Salop. *Orchis mascula*, Lin.
Vanilla. *Epidendrum vanilla*, Lin.

III. DICOTYLEDONOUS PLANTS.

§ 1. APETALOUS FLOWERS.

Class Fifth.

EPISTAMINIA.

(Stamina fixed on the pistil.)

ARISTOLOCHIÆ.

Perennial herbaceous plants, or sarmentose shrubs; leaves alternate; flowers axillary; calix monosepalous or irregular; with six or twelve stamina, free, or soldered together, style simple; stigma five-lobed; fruit, a capsule, most commonly composed of six polyspermous cells.

European asarabacca. ***Asarum europæum***, Lin.
Round aristolochia. ***Aristolochia rotunda***, Lin.
Long aristolochia. ***Aristolochia longa***, Lin.
Virginian snake root. ***Serpentaria virginica***, Willd.
Hypocistus. ***Citinus hypocistus***, Lin.

Class Sixth.

PERISTAMINIA.

(Stamina fixed on the calix.)

SANTALACEÆ.

Stems ligneous; leaves alternate, simple, sometimes very small; flowers small, solitary, or in spikes; perigone with four or five divisions; four or five stamina; ovary unilocular; style simple; stigma, lobed; fruit, a drupe containing a monospermous nut.

White sanders. ***Santalum album***, Lin.

THYMELEÆ.

Stems ligneous, frutescent, ramose; leaves simple, generally alternate and frequently persistent; flowers hermaphrodite, solitary, terminal, or in axillary spikes; calix monosepalous, coloured, four or five-divided, eight and seldom ten stamina; ovary unilocular; style and stigma simple; fruit a monospermous *achene* or berry.

Garou. ***Daphne gnidium***, Lin.
Mezereon. ***Daphne mezereum***, Lin.
Laureola. ***Daphne laureola***, Lin.
Leather wood. ***Dirca palustris***, Willd.

LAURINEÆ.

Trees or shrubs of a fine appearance, aromatic; leaves alternate, tough, shining, often persistent; flowers umbellate or paniculate; calix monosepalous, six and seldom four-divided; stamina from six to nine and more; anthers bilocular; ovary free and unilocular; fruit a drupe, the base of which is surrounded by the calix, and which contains a single seed.

Sweet bay-tree. *Laurus nobilis*, Lin.
Cinnamon tree. *Laurus cinnamomum*, Lin.
Sassafras. *Laurus sassafras*, Lin.
Camphor tree. *Laurus camphora*, Lin.
Cassia lignea tree. *Laurus cassia*, Lin.
Cullilawan tree. *Laurus culilaban*, Lin.

POLYGONEÆ.

Stems herbaceous, seldom sarmentose; leaves alternate, sheathing at their base; flowers small and greenish, in spikes or panicles; calix monosepalous, three, five, or six-divided, often persistent, the bottom of which is formed by a perigynous disk*; stamina variable, never above fifteen; ovary free, monocelled; two or three sessile stigmas; fruit, a small achene, commonly triangular, with a farinaceous endosperm.

Officinal bistort. *Polygonum bistorta*, Lin.
Sorrel. *Rumex acetosa*, Lin.
Garden patience. *Rumex patientia*, Lin.
Palmate rhubarb. *Rheum palmatum*, Lin.
Waved-leaved rhubarb. *Rheum undulatum*, Lin.
Compact rhubarb. *Rheum compactum*, Lin.
Rhapontic. *Rheum rhaponticum*, Lin.

CHENOPODEÆ.

Stem herbaceous or frutescent, ramose; leaves alternate, deprived of stipules, flowers small, sometimes unisexual; calix monosepalous, persistent, with two or three deep divisions; from four to ten stamina; ovary free, unilocular; style bifid or quadrifid; from two to four stigmas; fruit membranous, compressed, indehiscent, seldom fleshy.

Jerusalem oak. *Chenopodium botrys*, Lin.
Wormseed. *Chenopodium anthelminticum*, Lin.
Mexican tea-plant. *Chenopodium ambrosioides*, Lin.
Stinking orach. *Chenopodium vulvaria*, Lin.
Salt-wort. *Solsola soda*, Lin.
Stinking ground-pine. *Camphorosma monspeliaca*, Lin.

Class Seventh.

HYPOSTAMINIA.

(Stamina fixed on the receptacle of the pistil.)

PLANTAGINEÆ.

Stems herbaceous, simple, or ramose; leaves either all radical or all cauline;

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* The disk is *perigynous* when the insertion of the stamina around the ovary is on the same horizontal plane with it.

flowers in ovoid spikes; calix persistent, with four divisions; corolla tubular, four-lobed; four stamina; ovary free; stigma simple; fruit opening in two hemispherical valves with two polyspermous cells.

Broad-leaved plantain. *Plantago major*, Lin.
Branching plantain. *Plantago psyllium*, Lin.

PLUMBAGINEÆ.

Herbaceous plants or shrubs; leaves alternate, oval, radical, often vaginant; flowers spicate or capitate; calix persistent; corolla monopetalous, with four deep divisions; five stamina; ovary free; five styles, and five stigmas; fruit, a capsule enveloped by the calix, sometimes indehiscent and monospermous.

Tooth-wort. *Plumbago europœa*, Lin.
Marsh roesmary. *Statice caroliniensis*, Walter.

§ 2. MONOPETALOUS FLOWERS.

Class Eighth.

HYPOCOROLLIA.

(Corolla staminiferous, and fixed on the receptacle of the pistil.)

GLOBULARIÆ.

Flowers always capitate; calix monosepalous, four-divided; corolla monopetalous, regular, four or five divided; stamina alternate with the lobes of the corolla; ovary free; one style; one stigma; fruit, an indehiscent and monospermous capsule.

French daisy. *Globularia alypum*, Lin.
Globularia vulgaris, Lin.

SCROPHULARIÆ.

Plants herbaceous, seldom ligneous; leaves alternate, or opposite; flowers in spikes; calix monosepalous, persistent, four or five-divided; corolla monopetalous, irregular; from two to four didynamous stamina; ovary simple; one style; one simple or bilobed stigma; fruit, a bilocular, bivalved and polyspermous capsule.

Officinal speedwell. *Veronica officinalis*, Lin.
Water pimpernel. *Veronica beccabunga*, Lin.
Germander-leaved speedwell. *Veronica chamœdrys*, Lin.
Teucrium-leaved speedwell. *Veronica teucrium*, Lin.
Spiked speedwell. *Veronica spicata*, Lin.
Hedge-hyssop. *Gratiola officinalis*, Lin.
Eye-bright. *Euphrasia officinalis*, Lin.
Fox-glove. *Digitalis purpurea*, Lin.

ACANTHACEÆ.

Shrubs or herbaceous plants with opposite leaves; flowers axillary, solitary, or in terminal spikes; from two to three bractes to each flower; calix monosepalous, irregular, with four or five deep divisions; corolla monopetalous, irregular, often bilabiate; from two to four didynamous stamina; ovary supported by a circular and hypogynous disk*; one style; one bi-lamellated stigma; fruit, a bilocular capsule containing two or more seeds, or a berry with from one to four small nuts.

Brank-ursine. *Acanthus mollis*, Lin.

JASMINEÆ.

Trees or shrubs with leaves opposite, simple or pinnate, with dots on their under surface; flowers hermaphrodite, or unisexual, in racemes or corymbs, of an agreeable odour; calix four or five-dentate; corolla monopetalous, regular, four or five-divided; two stamina; ovary free; style simple; stigma bifid; fruit, a bi-celled capsule, each cell containing one or two seeds, or a berry containing from one to four small nuts.

European olive tree. *Olea europæa*. Lin.
Fragrant olive tree. *Olea fragrans*, Thunberg.
Lilac. *Syringa vulgaris*, Lin.
Common ash-tree. *Fraxinus excelsior*, Lin.
Flowering ash-tree. *Fraxinus ornus*, Lin.
Round-leaved ash-tree. *Fraxinus rotundifolia*, Lin.

LABIATÆ.

Stems herbaceous or sub-frutescent, square; leaves opposite, as well as the branches; flowers odorous, axillary or verticillate, solitary, or disposed in corymbs or spikes; calix monosepalous, tubular, with five divisions; corolla monopetalous, irregular, tubular, with two lips and five divisions; four stamina, two of which are shorter than the other; ovary simple, quadrilobed; style simple, stigma bifid; fruit, *tretrachene*, with four seeds.

Rosemary. *Rosmarinus officinalis*, Lin.
Garden sage. *Salvia officinalis*, Lin.
Meadow sage. *Salvia pratensis*, Lin.
Garden clari. *Salvia sclarea*, Lin.
Syrian herb mastich. *Teucrium marum*, Lin.
Common germander. *Teucrium chamædrys*, Lin.
Water germander. *Teucrium scordium*, Lin.
Ground pipe. *Teucrium chamæpytis*, Lin.
French ground pipe. *Teucrium iva*, Lin.
Peppermint. *Mentha piperita*, Lin.
Canadian mint. *Mentha canadensis*, Willd.

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* The disk is *hypogynous* when the insertion of the stamina takes place under or on the same level with the base of the ovary.

Garden mint. *Mentha gentilis*, Lin.
Curled mint. *Mentha crispa*, Lin.
Green or spear mint. *Mentha viridis*, Lin.
Pennyroyal. *Mentha pulegium*, Lin.
Hyssop. *Hyssopus officinalis*, Lin.
Summer savory. *Satureia hortensis*, Lin.
Nep or cat mint. *Nepeta cataria*, Lin.
True lavender. *Lavandula vera*, De Cand.
Common or spike lavender. *Lavandula spica*, Lin.
French lavender. *Lavandula stæchas*, Lin.
Ground ivy. *Glechoma herderacea*, Lin.
Dead nettle. *Lamium album*, Lin.
Officinal betony. *Betonica officinalis*, Lin.
Common horehound. *Marrubium vulgare*, Lin.
Stinking horehound. *Ballota nigra*, Lin.
Mother-wort. *Leonurus cardiaca*, Lin.
Common thyme. *Thymus vulgaris*, Lin.
Common calamint. *Thymus calamintha*, Lin.
Mother of thyme. *Thymus serpillum*, Lin.
Wild marjoram. *Origanum vulgare*, Lin.
Sweet marjoram. *Origanum Marjorana*, Lin.
Balm. *Melissa officinalis*, Lin.
Sweet Basil. *Ocymum basilicum*, Lin.
Self-heal. *Prunella vulgaris*, Lin.

SOLANEÆ.

Plants herbaceous, annual or perennial; or shrubs of a gloomy, repulsive appearance; leaves alternate, the upper ones often geminate; flowers solitary, or spiked, commonly extra-axillary; calix persistent, monosepalous, and five-divided; corolla monopetalous, regular, rotate, or campanuliform, five-divided; stamina five; ovary simple, surrounded by a yellowish hypogynous disk; style simple; stigma bi-lobed; fruit, a bilocular, bivalved, and polyspermous capsule, or bi-celled berry, with a rugose and shagreen-like surface, containing the seeds.

Deadly nightshade. *Atropa belladonna*, Lin.
Mandrake. *Atropa mandragora*, Lin.
Potato plant. *Solanum tuberosum*, Lin.
Bitter-sweet. *Solanum dulcamara*, Lin.
Garden nightshade. *Solanum nigrum*, Lin.
Winter cherry. *Physalis alkekengi*, Lin.
Black henbane. *Hyosciamus niger*, Lin.
White henbane. *Hyosciamus albus*, Lin.
Golden henbane. *Hyosciamus aureus*, Lin.
Tobacco. *Nicotiana tobacum*, Lin.
Thorn-apple. *Datura stramonium*, Lin.

BORRAGINEÆ.

Herbaceous plants, annual or perennial, seldom woody; leaves simple, alternate, sessile, commonly covered with stiff hair; flowers in ramose spikes, sometimes solitary, often unilateral, and furnished with bractes; calix persistent, monosepalous, five-divided; corolla monopetalous, regular; five stamina; ovary quadrilobed, supported on an hypogynous disk; style simple, stigma sometimes bi-lobed; fruit, a four-celled capsule, or a berry, with four seeds, sometimes a *tetrachene.*

Dog's tongue. *Cynoglossum officinale,* Lin.
Borage. *Borrago officinalis,* Lin.
Comphrey. *Symphytum officinale,* Lin.
Bugloss. *Anchusa italica,* Lin.
Spotted lung-wort. *Pulmoniaria officinalis,* Lin.
Sebesten plant. *Cordia mixa,* Lin.

CONVOLVULACEÆ.

Stems herbaceous, or sub-frutescent, twining, slender; leaves alternate, calix persistent, five deep divisions; corolla monopetalous, regular, entire, or five-divided; five stamina; ovary free, style simple, or with several divisions; stigmas as many as there are divisions to the style; fruit, a capsule covered by the calix, containing from two to four monospermous or polyspermous cells.

Jalap. *Convolvulus jalapa,* Lin.
Scammony. *Convolvulus scammonia,* Lin.
Turpeth. *Convolvulus turpethum,* Lin.
Wild potato. *Convolvulus panduratus,* Mich.
Mechoacan. *Convolvulus mechoacan,* Lin.
White convolvulus. *Convolvulus sepium,* Lin.
Common convolvulus. *Convolvulus arvensis,* Lin.
Sea convolvulus. *Convolvulus soldanella,* Moris.

GENTIANEÆ.

Stems herbaceous; leaves opposite, sessile, or petiolate, entire, or compound; flower terminal, or axillary, often furnished with bractes; calix persistent, monosepalous, and divided; corolla monopetalous, regular, tubular, five-divided; commonly five stamina; ovary surmounted by a simple or bifid style, and a bilobed stigma; fruit, a bivalved capsule, with two polyspermous cells.

Officinal gentian. *Gentiana lutea,* Lin.
Purple gentian. *Gentiana purpurea,* Lin.
Dotted-leaved gentian. *Gentiana punctata,* Lin.
Stemless gentian. *Gentiana acaulis,* Lin.
Blue gentian. *Gentiana catesbæi,* Walt.
American columbo. *Frasera walteri,* Mich.
Chiretta. *Chirayta,* Roxburgh.
European centaury. *Chironia centaurium,* Lamb.
American centaury. *Chironia angularis,* Lin.
Buck bean. *Menyanthes trifoliata,* Lin.
Pink root. *Spigelia marylandica,* Lin.

APOCYNEÆ.

Stems herbaceous or woody, containing a milky juice; leaves opposite, sometimes alternate; flower terminal or axillary; calix monosepalous, five-divided; corolla monopetalous, regular; five stamina, sometimes free, at others monadelphous; two ovaries soldered in one; style short; stigma of a variable form; fruit a simple or double follicle, unilocular and polyspermous, or a berry with seeds sometimes furnished with a silky pappus.

Arguel. *Cynanchum arguel*, Delile.
Cynanchum ipecacuanha, Rich.
Cynanchum tomentosum, Lin.
Montpellier scammony. *Cynanchum monspeliacum*, Lin.
Tame poison. *Cynanchum vincetoxum*, Rich.
Larger periwinkle. *Vinca major*, Lin.
Codaga pala. *Nerium antidysentericum*, Lin.
St. Ignatius' bean. *Strychnos ignatia*, Lin.
Nux vomica, poison nut. *Strychnos nux vomica*, Lin.
Strychnos colubrina, Lin.
Butterfly weed. *Asclepias tuberosa.*
Common silk weed. *Asclepias syriaca*, Mich.
Flesh-coloured silk weed. *Asclepias incarnata*, Mich.
Dog's bane. *Apocynum androsæmifolium*, Mich.
Periploca secamone, Lin.
Periploca emetica, Retz.

Class Ninth.

PERICOROLLIA.

(Corolla inserted on the calix.)

DIOSPYREÆ.

Stem ligneous, sometimes arborescent; leaves alternate, simple; flowers axillary; calix monosepalous, unequal, four or five-toothed, free, or soldered with the ovary; corolla monopetalous, regular, four or five-divided; stamina in variable number; ovary four-celled; style simple; stigma quadrilobed; fruit a capsule or berry with several monospermous cells.

Officinal storax. *Styrax officinalis*, Lin.
Benzoin tree. *Styrax benzoe*, Dryander.

ERICINEÆ.

Trees or shrubs, with leaves alternate, opposite, or verticillate; flowers solitary, or in spikes; calix persistent, monosepalous, four or five-divided; corolla monopetalous, regular, five-divided, often perisistent; stamina from eight to ten, with bilocular anthers; ovary five-celled; fruit, a five-celled and five-valved capsule, containing seeds.

Bear's berry. *Arbutus uva ursi*, Lin.
Winter green, pipsissewa. *Chimaphila umbellata*, Pursh.
Trailing epigea. *Epigea repens*, Willd.

CAMPANULACEÆ.

Plants herbaceous, annual or perennial, lactescent; leaves alternate, simple; flowers solitary or spicate, commonly blue or white; calix adherent at its base to the ovary, four or five divided: corolla monopetalous, sometimes regular, at others irregular, five-lobed; five stamina, alternate with the lobes of the corolla, free or soldered together; ovary from two to five cells; style simple; stigma, two, three, or five-lobed; fruit a capsule crowned by the calix, with from three to five polyspermous cells.

Indian tobacco. *Lobelia inflata*, Willd.
Cardinal flower. *Lobelia cardinalis*, Lin.
Blue cardinal. *Lobelia syphilitica*, Lin.

Class Tenth.

EPICOROLLIA-SYNANTHEREA.

(Corolla inserted on the pistil; stamina united.)

SYNANTHEREÆ.

Herbaceous or frutescent plants; leaves alternate or opposite, entire or gashed; flowers hermaphrodite, unisexual or neutral, united in a capitulum, and supported by a receptacle, and surrounded by one or more rows of scales forming an involucre; every one of them is composed of a monopetalous, regular and tubular corolla, called *floret*, or of an irregular corolla, inclining to one side, called *semi-floret;* five stamina: anthers united; one simple style; stigma bifid; fruit an achene of variable form; naked, or crowned by a silky or plumose pappus.
This family is naturally divided into three tribes.

a. CARDUACEÆ.

Leaves alternate, frequently covered with thorns, flowers all flosculous; receptacle villous; style furnished with a circular row of hair, under the bifurcation of the stigma.

Ladies' thistle. *Carduus marianus*, Lin.
Burdock. *Arctium lappa*, Lin.
Common star thistle. *Centaurea calicitrapa*, Lin.
Holy thistle. *Centaurea benedicta*, Lin.
Corn flower. *Centaurea cyanus*, Lin.
Greater Centaury. *Centaurea centaurium*, Lin.
St. Barnaby's thistle. *Centaurea jacea*, Lin.

b. CORYMBEFERÆ.

Flowers, all flosculous, hermaphrodite or unisexual, most commonly radiated, that is, with florets in the centre and semi-florets, either female or neutral, at the circumference; receptacle naked, or furnished with pilose or scaly *pappi*, in number equal to that of the flowers; style, without hair.

Common chamomile. *Anthemis nobilis*, Lin.
Stinking chamomile. *Anthemis cotula*, Lin.
Dyer's chamomile. *Anthemis tinctoria*, Lin.
Pellitory of Spain. *Anthemis pyrethrum*, Lin.
Sneeze-wort. *Achillea ptarmica*, Lin.
Milfoil. *Achillea millefolium*, Lin.
Dwarf milfoil. *Achillea nana*, Lin.
Musk milfoil. *Achillea moschata*, Lin.
Maudlin tansy. *Achillea aratra*, Lin.
Wormwood. *Arthemisia absynthium*, Lin.
Roman wormwood. *Arthemisia pontica*, Lin.
Mugwort. *Arthemisia vulgaris*, Lin.
Santonicum, wormseed. *Arthemisia judaica*, Lin.
Icy wormwood. *Arthemisia glacialus*, Lin.
Spiked wormwood. *Arthemisia spicata*, Lin.
Southern wood. *Arthemisia abrotanum*, Lin.
Sementine. *Arthemisia contra*, Lin.
Stragon. *Arthemisia dracunculus*, Lin.
Common tansy. *Tanacetum vulgare*, Lin.
Alecost. *Tanacetum balsamita*, Lin.
Feverfew. *Matricaria parthenium*, Lin.
Dog's chamomile. *Matricaria chamomilla*, Lin.
Single marigold. *Calendula officinalis*, Lin.
Wild marigold. *Calendula arvensis*, Lin.
Leopard's bane. *Arnica montana*, Lin.
Elecampane. *Inula helenium*, Lin.
Colt's foot. *Tussilago farfaro*, Lin.
Balm-leaved Spilanthus. *Spilanthus acmella*, Lin.
Gardener's spilanthus. *Spilanthus oleracea*, Lin.
Groundsel. *Senecio vulgaris*, Lin.
Hemp agrimony. *Eupatorium cannabium*, Lin.
Thorough-wort. *Eupatorium perfoliatum*, Willd.
Purple eupatorium. *Eupatorium purpureum*, Willd.
Canadian flea-bane. *Erigeron canadense*.
Pensylvanian flea-bane. *Erigeron pensylvanicum*.
Various-leaved scabious. *Erigeron heterophyllum*.

c. CICHORACEÆ.

Lactescent plants; *capitula* entirely formed of semi-florets.

Strong-scented lettuce. *Lactuca virosa*, Lin.
Common lettuce. *Lactuca sativa*, Lin.
Dandelion. *Leontodon taraxacum*, Lin.

Esculent vipers' grass. *Scorzonera hispanica*, Lin.
Wild succory. *Cichorium intybus*, Lin.

Class Eleventh.

EPICOROLLIA-CORISANTHERIA.

(Corolla inserted on the pistil; stamina distinct.)

DIPSACEÆ.

Stems herbaceous, seldom frutescent; leaves opposite; flowers capitate, resting on a common receptacle, furnished with scales, and surrounded with a common involucre; each flower provided with a proper involucre; calix adherent to the ovary; corolla monopetalous, tubular, four or five lobed; four or five stamina, anthers distinct; ovary, style, and stigma, simple; fruit, a solitary seed covered over by the calix.

Common scabious. *Scabiosa arvensis*, Lin.

VALERIANEÆ.

Herbaceous plants, with opposite leaves; flowers naked, paniculate, or corymbose; calix adherent, irregular; corolla tubular, with five unequal lobes; stamina from one to five; ovary and style simple; stigma tripartite; fruit, an achene surmounted by the teeth of the calix, or by a plumose pappus.

Wild valerian. *Valeriana officinalis*, Lin.
Celtic nard. *Valeriana celtica*, Lin.
Garden valerian. *Valeriana Phu*, Lin.
Dioicous valerian. *Valeriana dioica*, Lin.

RUBIACEÆ.

Stem herbaceous or woody; leaves opposite, with simple stipules, or verticillate without stipules; calix adherent to the ovary, entire, four or five dentate; corolla monopetalous, regular, from four to five divisions; four or five stamina, alternate with the divisions of the corolla; ovary bi-celled, surmounted by a yellowish epigynous disk; style bifid; two stigmas; fruit, sometimes two small monospermous shells; or either a capsule or a berry with two, four, five, or more monospermous or polyspermous cells.

Cheese-rennet. *Gallium verum*, Lin.
Asperula cynanchica, Lin.
Madder plant. *Rubia tinctorum*, Lin.
Gray or loxa bark. *Cinchona condaminea*, Humboldt.
Calisaya bark. *Cinchona cordifolia*, Mutis.
Orange bark. *Cinchona lancifolia*, Mutis.
Red bark. *Cinchona oblongifolia*, Mutis.
White bark. *Cinchona ovalifolio*, Mutis.
St. Domingo bark. *Exostemma floribunda*, Persoon.
St. Lucia bark. *Exostemma caribæa*, Persoon.

Georgia bark. *Pinkneya pubescens*, Michaux.
Cinchona uneva. *Portlandia grandiflora*, Lin.
Coffee plant. *Coffea Arabica*, Lin.
Officinal ipecacuanha. *Cephaelis ipecacuanha*, Lin.
Striated ipecacuanha. *Psychotria emetica*, Lin.
White ipecacuanha. *Richardsonia brasilensis*, Gomez.
Herbaceous psychotria. *Psychotria herbacea.*
Kino tree. *Nauclea gambeer*, Hunter.

CAPRIFOLIACEÆ.

Stems herbaceous, most commonly ligneous, sometimes twining from right to left; leaves opposite; simple; flowers solitary or in axillary or terminal panicles; calix adherent to the ovary; corolla monopetalous, regular or irregular; stamina from four to five; ovary surmounted by a disk; style simple or none at all; stigmas from one to three; fruit fleshy, crowned by the teeth of the calix, and containing one or more seeds.

Black elder. *Sambucus niger*, Lin.
Canadian elder. *Sambucus canadensis*, Willd.
Dwarf elder. *Sambucus ebulus*, Lin.
Fever-wort. *Triosteum perfoliatum*, Lin.

HEDERACEÆ.

Trees or shrubs with alternate leaves without stipules; flowers in simple umbels; calix four or five toothed; corolla four or five distinct petals; four or five stamina, alternate with the petals; style and stigma simple; fruit fleshy, crowned with the teeth of the calix, and containing from two to five small nuts.

Dog-wood. *Cornus florida*, Lin.

§ 3. POLYPETALOUS.

Class Twelfth.

EPIPETALIA.

(Stamina and corolla inserted on the pistil.)

ARALIACEÆ.

Stems herbaceous, frutescent or aborescent; leaves alternate, compound, with a sheathing petiole at their base; flowers small, umbellate, and furnished with an involucre; calix entire or dentate; corolla from five to six regular petals; stamina equal in number to the petals; seldom double the number of the petals; ovary five, six, ten, and twelve celled; style, as many stigmas as the ovary contains cells; fruit, a berry with one, two, five, and more monospermous cells.

False sarsaparilla. *Aralia nudicaulis*, Willd.
Yellow-root. *Zanthoxylum fraxineum*, Willd.
Ginseng. *Panax quinquefolium*, Lam.

UMBELLIFERÆ.

Stems herbaceous, fistulous, sometimes ligneous ; leaves alternate, sheathing, generally deeply cut, or composed of folioles of variable form and size ; flowers small, white, in simple or compound umbels, surrounded by symmetrical folioles, called *common* or *partial involucre;* calix, five-toothed ; corolla, five petals ; five stamina ; ovary bi-celled, surmounted by a nipple-formed disk ; two styles, two very small stigmas ; fruit a diachene of very variable form, and dividing when ripe, in two achene.

Anise plant. *Pimpinella anisum*. Lin.
Burnet saxifrage. *Pimpinella saxifraga*, Lin.
Caraway plant. *Carum carvi*, Lin.
Common parsley. *Apium petroselinum*, Lin.
Strong-scented parsley. *Apium graveolens*, Lin.
Baldmoney. *Meum vulgare*, Lin.
Sweet fennel. *Anethum fœniculum*, Lin.
Dill plant. *Anethum graveolens*, Lin.
Cumin. *Cuminum cyminum*, Lin.
Coriander. *Coriandrum sativum*, Lin.
Hemlock. *Conium maculatum*, Lin.
Hemlock. *Œthusa cynapium*, Lin.
Galbanum. *Selinum galbanum*, Lin.
Marsh smallage. *Selinum palustre*, Lin.
Carrot. *Daucus carota*, Lin.
Chervil. *Scandix cerefolium*, Lin.
Ammoniacum plant. *Heracleum gummiferum*, Willd.
Opopanax plant. *Pastinaca opopanax*, Lin.
Assafœtida plant. *Ferula assafœtida*, Lam.
Angelica plant. *Angelica archangelica*, Lin.
Sea fennel. *Crithmum maritimum*, Lin.
Common eryngo. *Eryngium campestre*, Lin.
Sea holly. *Eryngium maritimum*.
Larger ammi. *Ammi majus*, Lin.
Lovage. *Ligusticum levisticum*, Lin.
Master-wort. *Imperatoria ostruthium*, Lin.

Class Thirteenth.

HYPOPETALIA.

(Stamina and corolla inserted on the receptacle of the pistil.)

RANUNCULACEÆ.

Herbaceous, and sometimes sub-frutescent plants, with alternate leaves, simple or compound ; flowers generally large, of a fine colour ; calix polysepalous, almost always corolliform, from three to five sepals ; corolla sometimes wanting, or with five petals or more ; stamina numerous, free ; ovaries inserted on a common receptacle, in definite or indefinite numbers, solitary or soldered together, each of them bearing a lateral style, and a simple stigma; fruits, compressed and capitate achenes; or either aggregated or distinct capsules, which are unilocular and polyspermous.

Bulbous-rooted crow-foot. *Ranunculus bulbosus*, Lin.
Meadow crow-foot. *Ranunculus acris*, Lin.
White anemone. *Anemone nemorosa*, Lin.
Traveller's joy. *Clematis vitalba*, Lin.
Virgin bower. *Clematis erecta*, Lin.
Pæony. *Pæonia officinalis*, Lin.
Black hellebore. *Helleborus niger*, Lin.
Green hellebore. *Helleborus viridis*, Lin.
Fetid hellebore. *Helleborus fœtidus*, Lin.
Stavesacre. *Delphinium staphisagria*, Lin.
Common wolf's bane. *Aconitum napellus*, Lin.
Monk's hood aconite. *Aconitum lycoctonum*, Lin.
Aconitum anthora, Lin.
Gold thread. *Coptis trifoliata*, Salisb.

PAPAVERACEÆ.

Herbaceous plants, often annual, lactescent; leaves alternate; flowers large, solitary, terminal; calix composed of two concave and caducous sepals; corolla, four petals; stamina free, numerous; ovary free; stigma sessile, radiated, or lobed; fruit, a polyspermous capsule.

White poppy. *Papaver somniferum*, Lin.
Red corn poppy. *Papaver rhœas*, Lin.
Blood-wort. *Sanguinaria canadensis*, Willd.
Great celandine. *Chelidonium majus*, Lin.

FUMARIACEÆ.

Annual or perennial herbaceous plants, not lactescent; leaves alternate; calix very small, with two sepals; corolla irregular, calcarate, with four unequal petals; six diadelphous stamina; central anthers bi-celled; lateral ones uni-celled; ovary simple; style filiform; stigma bi-lamellate; fruit, a capsule in the form of a bi-valve silicle, or an achene; seeds with arils.

Officinal fumitory. *Fumaria officinalis*, Lin.
Spiked fumitory. *Fumaria spicata*, Lin.

CRUCIFERÆ.

Herbaceous plants with alternate leaves; flowers corymbose, paniculate, or in spikes; calix, four caducous sepals; corolla, four petals unguiculate and alternate with the divisions of the calix; stamina tetradynamous, that is, two small, and four large in two opposite pairs; ovary bi-celled; style short; stigma bi-lobed; fruit called *siliqua*, silicle, when it is elongate, bilocular, bivalved, and polyspermous, and *silicula* when short, elliptical, rounded, or angular.

Water cress. *Sisymbrium nasturtium*, Lin.
Hedge mustard. *Erysimum officinale*, Lin.
Stinking hedge mustard. *Drysimum alliare*, Lin.
Black mustard. *Sinapis nigra*, Lin.
Common cardamine. *Cardamine pratensis*, Lin.
Dittander. *Lepidium sativum*, Lin.
Officinal cochlearia. *Cochlearia officinalis*, Lin.
Horse-radish. *Cochlearia armoracia*, Lin.

CAPPARIDEÆ.

Herbaceous plants, or shrubs with alternate leaves, simple and stipulate, or compound and without stipules; calix, four sepals; corolla, four petals, often irregular; stamina numerous; ovary stipitate, unilocular; style simple, or divided as well as the stigma; fruit elongate, fleshy, in the form of an unilocular berry or silicle, containing reniform seeds.

Caper plant. *Capparis spinosa*, Lin.

ACERINEÆ.

Trees with opposite leaves, simple or compound; flowers racemose or corymbose, often dioicous from abortiveness; calix monosepalous, persistent, five-divided; corolla, five unguiculate petals inserted on a hypogynous disk; stamina definite; ovary didymous; one style and one stigma, seldom two; fruit composed of two, and seldom of three dispermous and winged shells.

Sugar maple tree. *Acer saccharinum*, Lin.

HYPPOCASTANEÆ.

Trees or shrubs, with opposite leaves, digitate, without stipules; flowers thyrsoid; calix monosepalous, tubular, five-divided; corolla, four unequal and unguiculate petals; stamina declined, from seven to eight; ovary trilocular; style simple; stigma trilobed; fruit, a tough and three-valved capsule, containing from one to five seeds, covered with a brown and shining envelope, marked with a large, whitish, and unpolished spot.

Horse-chesnut tree. *Œsculus hippocastanum*, Lin.

GUTTIFERÆ.

Very lofty trees, with leaves opposite, entire, tough, persistent; flowers axillary or terminal; calix monosepalous or polysepalous; four petals generally, of a yellow colour; stamina definite, free, or monadelphous; anthers elongate, adnate to the lateral parts of the filaments; ovary unilocular or multilocular; style and stigma simple; fruit variable, either a tough berry, with one or more seeds, or a monospermous or polyspermous capsule.

Gamboge tree. *Stalagmitis cambogioides*, Murray.
Camphor tree. *Dryobalanops camphora*, Colebroke.

AURANTIACEÆ.

Trees or shrubs with leaves alternate, simple or compound, persistent, shining and very often furnished with glandular points; flowers axillary, whitish, or slightly purple; calix monosepalous, with four or five divisions; corolla four or five petals; stamina generally ten, inserted on a hypogynous disk; ovary simple, with several cells; fruit a polyspermous berry.

Orange tree. *Citrus aurantium*, Lin.
Lemon tree. *Citrus medica*, Lin.
Bergamot tree. *Citrus bergamia*, Lin.

THEACEÆ.

Shrubs with leaves alternate, simple, not glandular, persistent; flowers axillary, very large; calix monosepalous, with from five to seven deep divisions; five or a greater number of petals disposed in two rows; stamina numerous, soldered in several bundles by their filaments; anthers rounded, bi-celled; ovary free, three or four-celled; style simple or divided; three to four stigmas; fruit, a tough and hard capsule, with three or four prominent ribs, with as many cells, containing from one to two seeds.

Chinese tea tree. *Thea sinensis*, Lin.
Camellia tree. *Camellia sasangua*, Lin.

MELIACEÆ.

Stem ligneous, frutescent, or arborescent; leaves alternate, simple; flowers in terminal panicles; calix monosepalous, four or five-divided; corolla, four or five petals, sessile, equal or unequal; stamina in an equal or double number to that of the petals; ovary, style, and stigma simple; fruit, a capsule with four or five monospermous or dispermous cells.

Canella alba. *Winterania canella*, Lin.
Pride of China. *Melia azedarach*, Lin.
Febrifuge swietenia. *Swietenia febrifuga*, Lin.

VINIFERÆ.

Sarmentose and climbing shrubs, with alternate, simple, or digitate leaves; tendrils ramose, and opposite to the leaves; flowers small, greenish, in clusters opposite to the leaves; calix short; corolla composed of four or six sessile petals; stamina opposite to the petals; ovary presenting a hypogynous disk, with two cells; style short and thick; fruit, a globular berry, containing from one to four seeds.

Vine. *Vitis vinifera*, Lin.

GERANIACEÆ.

Herbaceous and sometimes sub-frutescent plants, with opposite and occasionally alternate leaves, simple, or compound, with two stipules; flowers large and commonly of a brilliant colour; calix monosepalous, persistent, with five deep divisions; corolla five regular or irregular petals; from five to ten stamina, with filaments either free or monadelphous, all with, or a few of them without anthers; ovary free, with from three to five prominent angles; style elongate; from three to five stigmas; fruit, from three to five unilocular, indehiscent, and monospermous arils.

Stinking crane's-bill. *Geranium robertianum*, Lin.
Bloody crane's-bill. *Geranium sanguineum*, Lin.

Common crane's-bill. *Geranium gruinum*, Lin.
Spotted crane's-bill. *Geranium maculatum*, Lin.

OXALIDEÆ.

Annual or perennial herbaceous plants, without any apparent stems; leaves petiolate, composed of sessile folioles, opposite, or almost verticillate; flowers terminal or axillary; calix monosepalous, with five deep divisions, persistent; corolla pentapetalous; ten monadelphous stamina; ovary five-celled; five styles and five stigmas; fruit, a five-celled and polyspermous capsule, opening in five valves; the seeds are enveloped in a fleshy aril.

Wood sorrel. *Oxalis acetosella*, Lin.

MALVACEÆ.

Ligneous or herbaceous stems; leaves simple or compound, alternate, with stipules; flowers axillary or terminal; calix monosepalous, five-divided, having generally a second calix, called *exterior calix*; corolla pentapetalous; stamina numerous, with monadelphous filaments in the form of a tube; ovary with a great number of prominent ribs, or globular and five-celled; style simple or multifid; stigmas numerous; fruit, small capsules, indehiscent, unilocular, monospermous, in circular rows, or a single capsule, with five polyspermous cells, or, finally, a tough fruit, pulpy internally, and indehiscent.

Marsh mallow. *Althæa officinalis*, Lin.
Rose-coloured marsh mallow. *Althæa rosea*, Lin.
Common mallow. *Malva sylvestris*, Lin.
Round-leaved mallow. *Malva rotundifolia*, Lin.
Vervein mallow. *Malva alcea*, Lin.
Cacao tree. *Theobroma cacao*, Lin.

MAGNOLIACEÆ.

Trees or shrubs with alternate leaves; flowers large and very odorous; calix caducous, from three to four sepals; corolla, three or more petals forming several rows; stamina numerous; anthers elongate, and situated on the sides of the filaments; ovaries numerous, with a monospermous or polyspermous cell; fruit, bivalved capsules, or fruit, flat, thin, and indehiscent, seldom fleshy.

Winter's tree. *Drymis winteri*, Foster.
Star anise. *Illicium anisatum*, Lin.
Tulip tree. *Liriodendron tulipifera*, Willd.
Small magnolia. *Magnolia glauca*, Willd.

SIMARUBEÆ.

Trees or shrubs with alternate and imparipinnate leaves, without stipules; flowers in terminal clusters or panicles; calix short, persistent, four or five-divided; five erect and caducous petals; ten stamina, free and fixed to a thick hypogynous disk; ovary, five prominent ribs; style simple; stigma multilobed; fruit, small drupes, ovoid and elongate, equal in number to the cells of the ovary, and containing each a small nut; although distinct, the drupes are all supported by the fleshy disk.

Bitter quassia tree. ***Quassia amara***, Lin.
Lofty quassia tree. ***Quassia excelsa***, Lin.
Simaruba tree. ***Quassia simaruba***, Lin.

MENISPERMEÆ.

Sarmentose and twining shrubs, with alternate, simple, and petiolate leaves without stipules; flowers small, unisexual, commonly dioicous, in spikes or clusters; calix composed of several rows of sepals; corolla seldom wanting, and is generally composed of numerous petals, forming several rows; stamina monadelphous or free, in number equal, triple, quadruple to that of the petals; ovaries united at their base; styles and stigmas in equal number to the ovaries; fruit, a small monospermous drupe, recurvous, reniform, and containing a seed of similar form.

Indian berries. ***Cocculus indicus. Menispermum cocculus***, Lin.
Columbo. ***Menispermum palmatum***, Lin.
Pareira brava. ***Cissampelos pareira***, Lin.

BERBERIDEÆ.

Herbaceous or ligneous plants, with alternate, simple, and sometimes pinnate leaves; flowers small, yellow, in spikes or clusters; calix, three or six caducous sepals; petals three or six, opposite to the divisions of the calix; stamina from three to six, opposite to the petals; anthers with two remote cells; ovary simple; style and stigma simple, the latter sometimes sessile; fruit, an unilocular and polyspermous berry, sometimes a capsule.

European barberry. ***Berberis vulgaris***, Lin.
American barberry. ***Berberis canadensis***, Mich.

PODOPHYLLEÆ.

Herbaceous plants, aquatic or growing in marshy places; leaves petiolate and peltinerves; flowers supported by one-flowered peduncles; calix three or four-sepalous; corolla composed of several rows of petals, alternate with the divisions of the calix; stamina numerous; several many-celled ovaries; style very short, stigma thick and peltate; fruit fleshy, composed of *carpelles, in number equal to the cells of the ovary.**

May apple. ***Podophyllum peltatum***, Lin.

TILIACEÆ.

Trees, shrubs, and sometimes herbaceous plants, with alternate leaves, simple, and furnished with stipules; flowers axillary or terminal; calix coloured, caducous, with four or five deep divisions; corolla, four or five petals, alternate with the sepals; stamina numerous; anthers bi-celled; ovary simple, sessile, from two to five celled; style simple, stigma two, three, or five lobed; fruit, dry or succulent, with two or more monospermous cells.

*** The name of *carpelle* is given to each of the fruit, or partial pistils produced by a single flower.**

Linden tree. *Tilia europæa*, Lin.

CISTEÆ.

Trees or shrubs. with opposite or simple leaves, with or without stipules; flowers axillary or terminal; calix monosepalous, with five deep divisions; corolla, five regular petals; stamina numerous; ovary globular, three to five celled; style and stigma simple; fruit dry, from three to five polyspermous cells.

Cretican cistus. *Cistus creticus*, Lin.

VIOLARIÆ.

Herbaceous or sub-frutescent plants, with simple and opposite leaves, furnished with stipules; flowers axillary, straight, or resupinate at the summit of the peduncle; calix deeply five-divided; corolla irregular, with five unequal petals, the inferior one larger; stamina, five, alternate with the petals; anthers bilocular; ovary free, unilocular; style straight or crooked; stigma simple, or inflated and concave, fruit, a tri-valved and polyspermous capsule.

Sweet-scented violet. *Viola odorata*, Lin.
Wild violet. *Viola arvensis*, Lin.
Heart's-ease. *Viola tricolor*, Lin.
Dog's violet. *Viola canina*, Lin.
Ionide ipecacuanha. *Viola ipecacuanha*, Vent.

POLYGALEÆ.

Herbaceous or woody plants, with alternate leaves, without stipules; flowers terminal and spicate, sometimes solitary and axillary, furnished with two lateral bractes; calix, three, four, or five regular or irregular divisions; corolla, from three to four petals, free or soldered at their base; eight diadelphous stamina, with soldered filaments, sometimes two or three free stamina only; anthers unilocular; ovary free, with one or two cells; stigma of various forms; fruit, a capsule with one or two monospermous and bivalved cells; seed, often furnished with an aril.

Bitter polygala. *Polygala amara*, Lin.
Polygala rubella, Willd.
Polygala seneka. *Polygala senega*, Lin.
Ratanhia. *Krameria triandria*, Lin.
Krameria ixina, Lin.

RUTACEÆ.

Stems herbaceous or ligneous; leaves alternate or opposite, simple or compound; flowers terminal or axillary; calix monosepalous, deeply five-divided; corolla four or five petals, seldom unequal; from eight to ten stamina, supported on a hypogynous disk; ovary with five ribs and as many cells; style simple; stigma 3-lobed; fruit globular or compressed, with two, three, or five ribs, sometimes prominent and winged.

Common rue. *Ruta graveolens*, Lin.
Guaiacum. *Guaiacum officinale*, Lin.

True angustura. *Cusparia febrifuga*, Lin.
Diosma crenata, Lin.

CARYOPHYLLEÆ.

Stems herbaceous or sub-frutescent; leaves opposite, sessile; flowers spicate or in terminal bunches; calix monosepalous, five toothed, persistent, and tubular, or five-sepalous; corolla, five unguiculate petals; four, five, or ten stamina; ovary free, with one or many cells; styles, from one to five, and as many stigmas; fruit, a capsule, with one or many multivalved and polyspermous cells; the fruit is sometimes bacciform.

Pink. *Dianthus caryophyllus*, Lin.
Soap-wort. *Saponaria officinalis*, Lin.
Ground pink. *Silene virginiana*, Willd.

LINACEÆ.

The plants belonging to this family differ from the preceding by their having alternate leaves, monadelphous stamina, petals not unguiculate, and by their having a capsule with ten monospermous cells.

Common flax. *Linum usitatissimum*, Lin.
Purging flax. *Linum catharticum*. Lin.

Class Fourteenth.

PERIPETALIA.

(Stamina fixed to the calix.)

PORTULACEÆ.

Herbaceous plants or shrubs with opposite or alternate leaves, generally thick and fleshy; calix free or semi-adherent to the ovary, with two or more divisions; corolla, four or five petals; stamina variable; ovary, uni-celled or many-celled; style simple or divided; one or more stigmas; fruit, an unilocular or multilocular capsule, containing one or more seeds.

Common purcelaine. *Portulaca oleracea*, Lin.
Tamarisk tree. *Tamarix gallica*, Lin.

SAXIFRAGEÆ.

Herbaceous plants, with leaves sometimes united at the base of the stem in the form of rosette; at others alternate, or even opposite; flowers solitary, corymbose or in clusters; calix monosepalous, with four or five divisions, more or less deep, free or more or less adherent; corolla, seldom wanting, generally composed of four or five petals, inserted on the upper part of the tube of the calix, and alternate with the divisions of the latter; stamina, in equal or double number, and inserted like the petals; ovary superior and free, rarely interior and adherent, surmounted by two styles and two stigmas; fruit, an unilocular or bi-locular capsule, opening at top in two valves; seeds numerous, fixed to the edges of the valves.

American sanicle.

PARONYCHIEÆ.

Herbaceous or sub-frutescent stems; leaves furnished with stipules when opposite, and without stipules when connate; flowers terminal or axillary, cespitose or corymbose; calix monosepalous, five-divided; corolla, five squamiform petals, alternate with the divisions of the calix; stamina five, alternate with the petals, ovary free; one or more styles; one or more stigmas; fruit, an unilocular, monospermous or polyspermous capsule.

Smooth rupture-wort. *Herniaria glabra*, Lin.
Hairy rupture-wort. *Herniaria hirsuta*, Lin.

CRASSULACEÆ.

Herbaceous and succulent plants, with thick, fleshy, alternate, or opposite leaves; flowers spicate, corymbose or cymose; calix divided into a definite number of lobes; petals in number equal to the lobes of the calix, and alternate with them; stamina as many or double in number to the divisions of the corolla, ovaries as numerous as the petals, arranged in a circular line, and each of them furnished with a style and a stigma; fruit, an unilocular and polyspermous capsule.

Wall pepper. *Sedum acre*, Lin.

RIBESIEÆ.

Shrubs with alternate, petiolate, and lobed leaves, often furnished with prickles; flowers solitary, in spikes or clusters, or axillary; calix monosepalous, five-divided; corolla, five small petals, alternate with the divisions of the calix; five stamina, alternate with the petals, and inserted on a perigynous disk; anthers bilocular, cordiform; ovary unicelled; style simple or bifid; fruit, a globular berry, polyspermous and umbilicate at top.

Red currant. *Ribes rubrum*, Lin.
Black currant. *Ribes nigrum*, Lin.

MYRTINEÆ.

Trees or shrubs with persistent and opposite leaves; flowers axillary or terminal; calix monosepalous, adherent to the ovary, slightly four or five divided; corolla polypetalous, regular; stamina numerous, free, or united in bundles; ovary unilocular or multilocular; fruit fleshy and bacciform, with one or more monospermous or polyspermous cells, or very dry and capsule-like.

Common myrtle. *Myrtus communis*, Lin.
Clove bark tree. *Myrtus caryophyllata*, Lin.
Pimento tree. *Myrtus pimenta*, Lin.
Clove tree. *Caryophyllus aromaticus*, Lin.
Pomegranate tree. *Punica granatum*, Lin.
Cajeput tree. *Melaleuca leucadendron*, Lin.

ROSACEÆ.

Herbaceous or ligneous plants, with alternate leaves, simple and more or less deeply cut, or compound of pinnate or digitate folioles; flowers generally white, solitary and axillary, or capitate, in clusters, &c.; calix monosepalous, tubular, or expanded, with five divisions; rarely a small exterior calix; corolla, five equal and regular petals; stamina very numerous; ovaries very variable as to number and position, every one of them unilocular; style lateral; stigma simple; fruit very variable, sometimes a drupe, at others a number of small achenes united into a common receptacle.

Strawberry plant. *Fragaria vesca*, Lin.
Silver weed. *Potentilla anserina*, Lin.
Common Cinquefoil. *Potentilla reptans*, Lin.
Tormentil. *Tormentilla erecta*, Lin.
Common avens. *Geum urbanum*, Lin.
American avens. *Geum rivale*, Lin.
Raspberry. *Rubus idæus*, Lin.
Common bramble. *Rubus fructicosus*, Lin.
Blackberry. *Rubus procumbens*, Lin.
Dewberry. *Rubus villosus*, Lin.
Drop-wort. *Spirea filipendula*, Lin.
Meadow-sweet. *Spirea ulmaria*, Lin.
Common agrimony. *Agrimonia eupatoria*, Lin.
Ladies' mantle. *Alchemilla vulgaris*, Lin.
Burnet saxifrage. *Poterium sanguisorba*, Lin.
Wild cherry tree. *Prunus virginiana*, Lin.
Plumb tree. *Prunus domestica*, Lin.
Sloe tree. *Prunus spinosa*, Lin.
Red cherry tree. *Cerasus vulgaris*, Miller.
Red cherry tree. *Cerasus mahaleb*, Miller.
Black cherry tree. *Cerasus avium*, Jussieu.
Bird cherry tree. *Cerasus padus*, De Cand.
Poison laurel. *Cerasus lauro-cerasus*, Rich.
Almond tree. *Amygdalus communis*, Lin.
Peach tree. *Persica vulgaris*, Miller.
Apricot tree. *Armeniaca vulgaris*, Lam.
Dog's rose. *Rosa canina*, Lin.
Red rose. *Rosa gallica*, Lin.
Pale rose. *Rosa centifolia*, Lin.
Apple tree. *Pyrus malus*, Lin.
Quince tree. *Cydonia vulgaris*, Rich.
Medlar tree. *Mespilus germanica*, Lin.

LEGUMINOSÆ.

Herbaceous plants, annual or perennial, or shrubs or trees, with leaves alternate, compound, digitate, or pinnate, furnished with two persistent stipules; flowers solitary, paniculate, in clusters, &c.; calix, monosepalous, tubular, or bell-shaped, with five divisions; corolla polypetalous and papilionaceous, or monopetalous and regular; stamina ten, sometimes diadelphous, at others distinct, or monodelphous; ovary simple; style and stigma simple; fruit, pod or legume, unicelled or bicelled, bivalved, monospermous or polyspermous, sometimes divided by transversal partitions, forming as many one-seeded cells, or a monospermous, indehiscent, and bivalved capsule.

Rest harrow. *Ononis spinosa,* Lin.
Officinal melilot. *Melilotus officinalis,* Lin.
Blue melilot. *Melilotus cæruleus,* Lin,
Stemless milk-vetch. *Astragalus exscapus,* Lin.
Tragacanth tree. *Astragalus gummifer,* Lin.
Astragalus verus, Olivier.
Bastard senna tree. *Colutea arborescens,* Lin.
Liquorice. *Glycyrrhiza glabra,* Lin.
Dragon's blood tree. *Pterocarpus draco,* Lin.
Sanders tree. *Pterocarpus santalinus,* Lin.
Copaiba tree. *Copaifera officinalis,* Lin.
Peruvian balsam tree. *Myroxylum balsamiferum,* Lin.
Balsam of tolu tree. *Myrospermum peruiferum,* De Cand.
Cabbage tree. *Geoffroya inermis,* Swartz.
Acute-leaved senna. *Cassia acutifolia,* Delile.
Obovate-leaved senna. *Cassia obovata,* Colladon.
American senna. *Cassia marylandica,* Willd.
Purging cassia. *Cassia fistula,* Lin.
Tamarind tree. *Tamarindus indica,* Lin.
Logwood. *Hæmatoxylum, campechianum,* Lin.
Nephretic wood. *Guilandina moringa,* Lin.
Gum Arabic tree. *Mimosa nilotica,* Lin.
Catechu tree. *Mimosa catechu,* Lin.
Gum Senegal tree. *Mimosa senegal,* Willd.
Wild indigo. *Baptisia tinctoria,* Ventenat.
Cowhage. *Stizolobium pruriens,* Brown.
Virginia goat's-rue. *Galega virginiana,* Pluck.

RHAMNEÆ.

Stems ligneous; leaves simple, opposite or alternate, with or without stipules; flowers small, generally greenish; calix monosepalous, spreading or turbinate, four or five lobed; corolla four or five, petals seldom wanting; stamina from two to five; ovary free, two, three, or four celled; style simple or divided; stigmas as numerous as the cells of the ovary; fruit dry and capsular, or fleshy, and containing one or several small nuts.

Buckthorn. *Rhamnus catharticus,* Lin.
European Black alder. *Rhamnus frangula,* Lin.
Jujube tree. *Rhamnus ziziphus,* Lin.
Common holly. *Ilex aquifolium,* Lin.
Evergreen cassine. *Ilex vomitoria,* Aiton.

TEREBINTHACEÆ.

Trees or shrubs with alternate leaves, generally trifoliate or pinnate; flowers small, in ramose clusters, hermaphrodite or unisexual, monoicous or dioicous; calix monosepalous, deeply four or five divided; corolla pentapetalous, or wanting; stamina, five or ten, alternate with the petals, and inserted on a perigynous disk; ovary free, unilocular, or multilocular; style short; stigma trilobed, or three distinct stigmas; fruit a drupe, dry or succulent, with a monospermous nut, or with several small nuts.

Elm-leaved sumach. ***Rhus coriaria***, Lin.
Poison oak. ***Rhus toxicodendron***, Lin.
Rhus radicans, Nuttall.
Narrow-leaved sumach. ***Rhus copallinum***, Willd.
Pennsylvania sumach. ***Rhus glabrum***, Willd.
Virginia sumach. ***Rhus typhinum***, Willd.
Pistachio nut tree. ***Pistachia vera***, Lin.
Chio or Chian turpentine. ***Pistachia terebinthus***, Lin.
Mastich tree. ***Pistachia lentiscus***, Lin.
Mecca balsam, or Balm of gilead tree ***Amyris opobalsamum***, Willd.
Amyris gileadensis, Lin.
Elemi tree. ***Amyris elemifera***, Lam.
Amyris kataf, Forskall.
False angustura tree. ***Brucea ferruginea.***
Olibanum tree. ***Boswellia serrata***, Roxburgh.

Class Fifteenth.

DICLINIA.

EUPHORBIACEÆ.

Herbaceous or ligneous plants; leaves alternate, scattered, or opposite, sometimes thick and succulent; generally containing a very acrid milky juice; flowers unisexual, monoicous or dioicous, spicate or umbellate, seldom solitary, calix very often double, five or ten divided, the internal divisions coloured; male flowers, stamina variable, free or soldered by their filaments; female flowers, ovary globular, three-celled, and three-valved; three bifid styles; fruit, three-bivalved and elastic shells, containing one or two seeds, which are furnished at top with a crest or *caruncle* of variable shape.

Euphorbium plant. ***Euphorbia officinarum***, Lin.
Lesser cataputia spurge. ***Euphorbia lathyris***, Lin.
Ipecacuanha spurge. ***Euphorbia ipecacuanha***, Lin.
Large flowering spurge. ***Euphorbia corollata.***
Wild spurge. ***Euphorbia sylvatica***, Lin.
Gerard's spurge. ***Euphorbia gerardiana***, Lin.
Cypress spurge. ***Euphorbia cyparissias***, Lin.
French mercury. ***Mercurialis annua***, Lin.

Cassada plant. *Jatropha manihot*, Lin.
Purging nut plant. *Jatropha curcas*, Lin.
Wild purging nut plant. *Jatropha gossypifolia*, Lin.
Spanish purging nut plant. *Jatropha multifida*, Lin.
Cascarilla tree. *Croton cascarilla*, Lin.
Croton plant. *Croton tiglium*, Lin.
Box tree. *Buxus sempervirens*, Lin.
Castor oil plant. *Ricinus communis*, Lin.

MYRISTICEÆ.

Trees containing a peculiar reddish juice; leaves alternate, not punctuated petiolate, coriaceous; flowers unisexual and dioicous, axillary or terminal, in clusters or in panicles; calix three-divided, from four to twelve stamina, soldered by the filaments and by the anthers; ovary monospermous; two styles and two stigmas; fruit, a drupe-like berry, monospermous, with a seed enveloped in an aril, generally cut into numerous and irregular portions.

Nutmeg tree. *Myristica moschata*, Thunberg.

URTICEÆ.

Herbaceous plants, shrubs, or trees, with alternate leaves furnished with stipules; flowers dioicous or monoicous, solitary or spicate; calix monosepalous, persistent, and deeply divided; male flowers, four or five stamina alternate, with the divisions of the calix; female flowers, ovary free and unilocular; two stigmas; fruit an achene, sometimes surrounded by the calix, which becomes fleshy and bacciform.

Fig tree. *Ficus carica*, Lin.
Contrayerva. *Dorstenia contrayerva*, Lin.
Black mulberry tree. *Morus nigra*, Lin.
Wall pellitory. *Parietaria officinalis*, Lin.
Hemp. *Cannabis sativa*, Lin.
Hop plant. *Humulus lupulus*, Lin.
Stinking nettle. *Urtica urens*, Lin.

JUGLANDEÆ.

Large trees with alternate and compound leaves; flowers unisexual, monoicous; male flowers in simple or compound aments at the extremity of the branches; calix squamiform, divided into two or six lobes; number of stamina undeterminate; female flowers solitary or united at the extremity of the branches; calix double, adherent to a simple and unilocular ovary, supporting two very thick stigmas, or one style with a quadrilobed stigma; fruit, a drupe slightly fleshy, containing a bivalved, or four-valved nut, the seed of which is uneven and cerebriform.

European walnut. *Juglans regia*, Lin.
White walnut. *Juglans Cinerea*, Lin.

CUPULIFERÆ.

Trees with simple, alternate, and stipulate leaves; flowers unisexual, monoicous; male flowers in elongate aments, calciform scale diversely shaped; from five to twenty stamina; female flowers axillary, solitary, or united and surrounded by a scaly capsule; ovary, two or three cells; two or three stigmas; fruit, a dry, monospermous, and indehiscent *acorn*, surrounded by the capula.

Common European oak. *Quercus robur*, Lin.
Gall-nut oak. *Quercus infectoria*, Lin.
Spanisk oak. *Quercus falcata*, Mich.

SALICINEÆ.

Trees or shrubs growing in moist soils, with alternate and simple leaves, furnished with stipules; flowers dioicous, in elongate or globular aments: male flowers, calicinal scale supporting an unilocular ovary; style short, with two bipartite stigmas; fruit, a small bivalved capsule, containing several very small seeds surrounded with a silky down.

Common white willow. *Salix alba*, Lin.
Common crack willow. *Salix fragilis*, Lin.
Broad-leaved willow. *Salix caprea*, Lin.
Triandrous willow. *Salix triandra*, Lin.
Black poplar. *Populus nigra*, Lin.

ULMACEÆ.

Trees with alternate and simple leaves, furnished with two small stipules; flowers hermaphrodite and axillary; calix, four or five-divided; four or five stamina; ovary free, unilocular; two sessile, elongate, and glandular stigmas; fruit, membranous *samara* [*], or a small monospermous drupe.

Common Elm. *Ulmus campestris*, Lin.
Red or slippery elm. *Ulmus fulva*, Mich.
American elm. *Ulmus americana*, Mich.

MYRICEÆ.

Shrubs with alternate or scattered leaves, with or without stipules; flowers dioicous, in axillary or terminal aments; male flowers composed of one or several stamina, often united together; female flower solitary and sessile, in the axilla of a bracte longer than the flower itself; ovary lenticular, unicelled, monospermous, and surmounted by a short and scarcely perceptible style, terminated by two very long and acute stigmas; around the ovary are several hypogynous scales of various forms, which may be considered as the perianthe; fruit dry, monospermous, indehiscent, sometimes membranous and winged at the edges.

Sweet willow. *Myrica gale*, Willd.
Wax myrtle. *Myrica cerifera*, Wild.

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[*] An oligospermous fruit, membranous, compressed, uni or bi-locular, indehiscent, often encompassed by a membranaceous alated border.

Carolinian wax myrtle. ***Myrica caroliniensis***, Willd.
Pennsylvanian wax myrtle. ***Myrica pennsylvanica***, Lam.

CONIFEREÆ.

Resinous trees, with persistent, narrow, tubular, solitary or geminate, or fasciculate leaves; flowers unisexual, monoicous, or dioicous; male flowers amentaceous; stamina in definite or indefinite number, sessile, or supported by distinct or soldered filaments; female flowers in squamous aments, ovoid or globular, with large and imbricate scales; one or two flowers at the base of each scale; ovary conical; fruit, an ovoid or angular achene.

Long-leaved pine. ***Pinus palustris***, Lin.
Wild pine. ***Pinus sylvestris***, Lin.
Scotch pine. ***Pinus rubra***, Lin.
Bordeaux pine. ***Pinus maritima***, Lin.
Silver fir tree. ***Pinus pinea***, Lin.
White larch. ***Pinus larix***, Lin.
American silver fir. ***Pinus balsamea***, Lin.
Juniper tree. ***Juniperus communis***, Lin.
Savin tree. ***Juniperus sabina***, Lin.
Red cedar. ***Juniperus virginiana***, Lin.

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Sagapenum ..	[illegible]
Opopanax ..	[illegible]
Marsh smallage ..	[illegible]
Skunk cabbage ..	[illegible]
Wild valerian ..	[illegible]
Garden valerian ..	[illegible]
Small valerian ..	[illegible]
Celtic valerian or nard	[illegible]
Orange flowers	[illegible]
——— leaves ..	[illegible]
Lime, or linden-tree flowers	[illegible]
Cajeput oil	[illegible]
Peony root ...	[illegible]
Stinking orach ..	[illegible]

[illegible] SUBSTANCES [illegible] ANIMAL KINGDOM

Su[illegible]
Su[illegible]
Dipp[illegible]

[illegible] III.

NARCOT[illegible]
Opium
Poppy he[illegible]
Red poppy [illegible]
MORPHIA
Acetate of m[illegible]
Sulphate of m[illegible]
Hydro-chlor[illegible] morphia

NARCOTINE, or Derosne's salt ..
Blood root, Puccoon ..
SANGUINARIA ..
Belladonna, Deadly nightshade ..
ATROPIA ..
Mandrake root ..
Stramonium, Thorn apple ..
DATURIA
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C. SMITH, PRINTER, WYCH-STREET, STRAND.